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Virginia Medical Monthly

Vol. 79, No. 11
WHOLE No. 1205

RICHMOND, VA., NOVEMBER, 1952

$2.00 A YEAR
25 CENTS A COPY

GUEST EDITORIAL

Newer Compounds in the Treatment of Hypertension

PRIMARY arterial hypertension, in contrast to the secondary form, is a vascular disorder of complex etiology. Neurogenic, endocrine, renal, vascular, hormonal, and possibly other mechanisms as yet unknown contribute components of varying importance in different individuals. This fact alone probably accounts for the infinite lists of drugs offered in therapy and dooms the physician's hope for any single substance as a real panacea. Of the wide spectrum of agents utilized over the past twenty years, most have been discarded for lack of general effectiveness. Sedatives, xanthines, slow acting nitrates and thiocyanates have been retained, but their usefulness is quite limited. Recently revived vasodepressor drugs representing mixtures of veratrum alkaloids, have narrow margins between therapeutic and toxic effects and therefore offer little utility in treatment. The pure alkaloid, protoveratrine, a potent vasodepressor and cardiodecelerator agent is at present unavailable commercially.

The introduction of compounds possessing antiadrenergic (adrenolytic and sympatholytic) action, piperoxan, dibenamine, regitine, dihydroergocornine, priscoline, and anticholinergic (total autonomic ganglion blocking) action, tetraethylammonium chloride, stimulated much investigative interest. However, each drug in turn proved impractical in primary hypertensive disease for disadvantages were evidenced by failure of depressor action, serious toxic side reactions, development of drug tolerance, brief duration of hypotensive response or necessity for parenteral injection. Currently undergoing clinical trial, dibenzyline (688-A) is an orally effective adrenergic blocking agent related to dibenamine. A report of eleven instances is favorable but the series is too small for practical judgment.

Recent observations in England of the pharmacologic properties of methonium compounds, principally hexamethonium and pentamethonium, revealed potent anticholinergic actions capable of blocking equally sympathetic and parasympathetic ganglia of the autonomic nervous system. Of these, hexamethonium was considered superior as a blocking agent. Enthusiastic clinical trial in hypertensive disease rapidly followed; at first hexamethonium bromide and iodide salts were administered parenterally, and somewhat later, when gastrointestinal absorption was demonstrated, the oral route was employed with bromide, chloride and bitartrate salts according to methonium content, i.e. 250 mgms. of hexamethonium bromide is equivalent to 350 mgms. of bitartrate salt. Bromide intoxication followed the oral ingestion of this salt, a matter at first unappreciated and several deaths were recorded. In general investigators abroad have been enthusiastic regarding these drugs, but this opinion is not unanimous.

The first methonium compound available in this country was hexamethonium bromide (bistrium) for parenteral use. The oral salt soon followed and hexamethonium chloride (methium) is now available commercially for prescription. These compounds

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are potent hypotensive agents and potentially hazardous, even lethal to patients with hypertension complicated by encephalopathy, cardiac and renal insufficiency. Common side effects indicating absorption of active amounts of drug include weakness, blurring of vision, dryness of the mouth, constipation progressing to ileus, atony of the bladder and most important of all pronounced postural fall in blood pressure to production of syncope. Too rapid lowering of pressure has led to vascular thromboses in brain and heart and to renal insufficiency. Therefore it seems more prudent to initiate therapy under controlled hospital conditions where individual sensitivity response may be observed. In addition all patients deserve careful laboratory investigation of cardiac and renal status before intelligent treatment may properly be instituted.

Patients exhibiting marked elevation in pressure with associated vascular complications seem best suited for parenteral therapy, which we start at low levels of 1.0 to 2.0 mgms. every four hours subcutaneously, increasing the dose daily until effect is obtained; then maintenance doses are instituted and the interval reduced between doses if possible to six or eight hours. If tolerance develops, the dose is increased but rarely exceeds 50 mgms. per dose, or 300 mgms. per day. Excessive hypotension may be combated with phenylephrine (neosynephrine) hydrochloride and obstipation or ileus with neostigmine (prostigmine) or urecholine. The severity of the hypertensive disease frequently indicates the need of low sodium diet, a fortunate fact since the action of methonium compounds is enhanced by rigid sodium restriction.

Oral dosage is usually begun with 125 to 250 mgms. of hexamethonium chloride administered on an empty stomach at least one-half hour before breakfast, lunch and dinner and at bedtime in order to spread the drug effect over the longest period of waking hours and to insure more uniform absorption of the drug. Recumbent and standing blood pressures are determined before each dose is given. Increments in dosage are made daily watching cautiously for too rapid or cumulative drug effect. Maintenance doses are instituted at appropriate levels usually 2 to 4 grams rarely exceeding five grams per day. Oral absorption is variable in the same individual from day to day and postural hypotension with extreme weakness and syncope may occur with little warning. Impotency in males usually can be avoided by the omission of one or more doses at the noon or presupper period when intercourse is contemplated later. Sudden withdrawal of drug, particularly in severe hypertensive states must be avoided since a rapid downhill course and death has followed abrupt cessation of drug administration.

Our own experiences utilizing various methonium compounds in over a hundred cases justify a few comments regarding this form of treatment. Hexamethonium salts are potent and useful tools in the management of hypertensive disease, but are not curative. Ganglionic blocking actions are incomplete. Potential dangers attend their use and caution is observed even after extended experience. Vascular accidents both cerebral and cardiac, during periods of postural hypotension have been observed; no instance of renal insufficiency or of death secondary to drug therapy has been encountered in our series. Lowering of pressure in the supine position can be achieved in most patients. Postural hypotension occurs regularly and represents a constant hazard; wide fluctuations between recumbent hypertension and postural hypotension occasionally demand discontinuance of treatment or use of smaller doses. Effects upon systolic pressure exceed those upon diastolic levels. Normal blood pressures are attained infrequently; compromise is therefore made in the direction of partial rather than complete control of pressure in most patients. The eventual effect of prolonged therapy on prognosis is still uncertain. Progress of vascular disease appears forestalled in some,

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but not in others, despite partial blood pressure control. The most suitable candidates appear to be the younger group of patients with progressive hypertension unresponsive to good medical management. These are the very patients presenting conventional indications for sympathectomy; the drug in effect substitutes an incomplete "chemical" sympathectomy. A priori, patients who have had sympathectomies previously performed are particularly sensitive to drug action of the blocking type. Older patients with vascular complications of hypertensive disease respond less well to drug administration; the hazards of thromboses, principally cerebral and cardiac, and the precipitation of renal insufficiency are real with too rapid and excessive blood pressure reduction when treatment is first begun or when wide fluctuations in pressure occur.

An additional compound now available, 1-hydrazinophthalazine (Apresoline), has received investigative consideration recently. This drug, weakly antiadrenergic, yet complex in action, is regarded by some as truly antihypertensive in action since it blocks the action of several pressor substances, including hypertension and pherentasin, and increases renal blood flow while lowering blood pressure. This drug employed alone has proved of some but little value because therapeutic amounts incur unpleasant side reactions (headache, tachycardia, nausea, and edema) in many patients, reduction in pressure is not great and tolerance tends to develop on prolonged administration. The concept of attacking the hypertensive problem by utilizing the different actions of hexamethonium and 1-hydrazinophthalazine in combination seems entirely acceptable. This addition however provides substantially greater danger. In the hands of one observer remarkable results have been achieved but deaths have occurred which warn against indiscriminate use of these powerful drugs. This investigator employs both drugs at four-hour intervals, usually beginning with hexamethonium in ascending doses to which 1-hydrazinophthalazine is added as pressure falls or fluctuates widely. Dosage is adjusted and regulated by levels of pressure recorded before each dose. Patients or relatives are taught to record blood pressures at home. This method, reportedly effective in blood pressure control in a large series of patients, has cumbersome disadvantages. Another observer and his colleagues utilize parenteral injections of hexamethonium at twelve-hour intervals to prevent development of tolerance and orally administer 1-hydrazinophthalazine midway between these two doses. A small series of nine cases is reported yet enthusiasm for the method is expressed.

Our own experiences using combined therapy are too meager to permit definite conclusions regarding efficacy of methods at this time. In each instance 1-hydrazinophthalazine has been added only after poor control was apparent with hexamethonium alone administered for at least several weeks or months. The problem offers both challenge and promise and demands continued investigation of large groups of hypertensive individuals.

Knowledge of the complex mechanisms underlying primary hypertension in man is slowly yet steadily evolving. The therapeutic horizon is brightening with the acquisition of new and effective drugs to supplement, but not replace well-established medical regimens. It no longer seems premature to hope that eventual control of hypertensive vascular disease may be accomplished through purely medical measures.

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THE RELATIONSHIP OF NAVY MEDICINE TO OPHTHALMOLOGY AND OTOLARYNGOLOGY*

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In their normal state the most amazing, and second in importance to no other of our special sense organs certainly, are our eyes and ears. The acoustic part of the ear is pretty much in an isolationist class insofar as its becoming involved in systemic conditions is concerned. I once studied anatomy under a professor who professed to be able to estimate the length of the intestinal tract of a given race of people by examining their ears externally, that is, their auricles. He was something of an anthropologist. I don't know how accurate his estimations were nor of what value they were irrespective of their accuracy. It is interesting to note, however, that, in contrast to the ear, the eye does manifest telltale evidence of numerous and divers systemic ailments. It is possible to look into one's eye and determine a lot besides its color and the honorableness of the individual's intentions. An eye examination, as we all know, may reveal evidence that is pathognomonic of a number of constitutional ailments to which the human constitution is subject.

It will be the principal purpose of this presentation, albeit, to consider more strictly impairment or defectiveness in the primary function of these special sense organs, with particular reference to such departure from normal as is related to physical trauma. Definitive comment will, in due course, be made upon the rehabilitory measures that are instituted in these categories of cases by the Medical Departments of the Armed Services.

In any event, before proceeding to discuss the abnormal with reference to eyes and ears I should like first, by way of establishing a point of departure so to speak, to refer briefly to the visual and auditory standards used by the Navy. The Navy's requirements with regard to hearing and vision vary somewhat, depending upon the category of duty it is intended that the individual perform, such, for example, as submarine and aviation duty, as compared with straight line or deck duty. These requirements vary for officers and enlisted personnel. They are not the same for men and women. Whether an individual seeks to become a member of the Regular Service or of a Reserve Component makes a difference, as does the matter of whether the examinee is being examined for original admission or to determine his or her fitness for remaining or shipping over in the service. These requirements vary with the several branches of the Armed Services and with respect to corps within a given branch. I hardly need remind this audience surely that the Navy's Medical Department provides medical coverage and care for the U.S. Marine Corps. The visual requirements for entry into the Naval Academy or to training under the Holloway Plan and those for entry into the Marine Corps are the highest of any. I had thought I might set forth in tabular form the visual and auditory standards of the Navy and Marine Corps but find the story to be too complicated and one subject to too complex an arrangement of determinants to permit its being set forth in a succinct fashion. I shall therefore launch forthrightly into the main course of my bill of fare.

OPHTHALMOLOGY

One of the prime objectives of military medicine is the medical and surgical care of the fighting man. Although comprising only a small percentage of all injuries, eye, ear, nose and throat injuries present an interesting aspect of military medicine. Treatment of war wounds varies somewhat from that in civilian life because the tissues are often considerably more traumatized. Mine, grenade, and mortar fire cause particularly widespread damage.

During World War II there were 640 recorded cases of unilateral blindness among Navy and Marine Corps personnel, of which 322 were caused by combat, 143 as a result of noncombat trauma, and 126 due to medical reasons. Approximately two-fifths were due to noncombat causes. Many of the medical ophthalmological problems, such as iritis, corneal ulcers, and refractive errors, often cause more loss of manpower in combat than do combat wounds. In one base hospital they were ten times greater

*An address delivered before the Twenty-Fifth Annual Spring Congress in Ophthalmology and Otolaryngology, Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Virginia, April 9, 1952.

during a one-year period. It is interesting to speculate upon the results of civilian bombing, should this ever occur. On the basis of information from the bombing of London, nearly three per cent of all injuries were eye injuries and, in providing for beds, ten per cent were for patients in whom eye injuries constituted the paramount disability. Based upon such past experience it is anticipated that blindness may be expected at the rate of about one per thousand casualties.

Korean Campaign. During the Korean Campaign most of the eye injuries occurring from land warfare have been evacuated to Army hospitals, the principal one being the Tokyo Army Hospital, which is the eye center for all United Nations troops. I was there last summer. Twelve per cent of the admissions to this base hospital have been eye injuries. While the total number of eye injuries is not available, by August, 1951, there had been 193 cases with bilateral eye wounds. Of these, twelve had vision less than 20/400 in the better eye.

The Lancaster hand magnet was found most useful for the removal of magnetic intraocular foreign bodies. For foreign bodies in the vitreous, a meridional incision through the pars planum gave the best results. In approaching foreign bodies imbedded in the retina, scleral incision directly over the foreign body and surgical diathermy around the opening was the method of approach. The Berman locator was found to be of great value in locating magnetic foreign bodies during operation. Copper and light metal alloys gave no response to the magnet or locator. The giant magnet was reported to have been used only three times for very small or slightly magnetic foreign bodies in the vitreous to bring them to the periphery where they could be removed by a hand magnet. The Sweet localization method seemed to give better results than the Pfeiffer method, but was inaccurate in partially collapsed eyes. Foreign bodies removed in the first 24 hours seemed to do better than those removed later. It should be stressed that accurate localization is much more important than speed of removal. Twenty-four cases were exposed for removal of intraocular foreign bodies which were found to be located extraocularly in muscles or sclera. The Berman locator was valuable in locating such bodies. Out of 157 orbital foreign bodies only 34 were removed.

Some form of eye injury existed in about 50% of all head injuries. Penetrating wounds of the eye were not uncommon in this series. Anterior wounds of the sclera were sutured with 3-0 catgut; posterior wounds of the sclera were usually not closed surgically as it was found that they closed spontaneously. Surgical diathermy along the margins of the wound to prevent retinal detachment was used with gratifying results. Corneal wounds were sutured with 6-0 silk if the wound gaped. Smaller corneal wounds were covered with a Kuhnt conjunctival flap. In six cases of wounds of the puncta a wire was passed through the inferior punctum, into the canaliculus on both sides of the wound, and into the sac and left in place for ten days. Patent canaliculi were obtained in four of the cases. Canaliculus needles may also be used. It was found that retinal detachments and disinsertions due to trauma usually occurred in the inferior quadrant. This, I'm told, it has been reasoned, may have been due to reflex elevation of the eyes when injury occurred. Subluxated lenses were not removed and no cases of glaucoma were noted. No cases of sympathetic ophthalmia have occurred. The blink reflex usually spares the eyes from burns due to explosion. Chemical burns occurred most often from battery acid, lime and phosphorus flares. Five per cent hydrosulphosol and 30 per cent sodium sulfacetamide were most commonly used in the treatment of these burns.

Since few front-line surgeons have had extensive training in ophthalmology, the following first aid measures for penetrating eye injuries seem indicated, from Korean experiences:

1. Evacuate as stretcher cases, with both eyes patched and within the first 24 hours, if at all possible.
2. Use prophylactic antibiotic therapy.
3. Employ atropinization. This is probably indicated except in cases of hyphemia and perhaps in cases of lens perforation.

Rehabilitation—Eye. In ancient days blinded veterans became an unwelcome charge on local communities. Following World War I, liberal pensions were granted but no training was given.

After World War II both the Army and Navy established blind rehabilitation centers. The Navy's center was located at the Naval Hospital, Philadel-

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phia, where 157 blind were admitted during the war years. All but 58 of these were due to trauma. Of the non-traumatic cases nearly half were due to methyl alcohol, a most regrettable and preventable cause.

Instead of duplicating facilities for rehabilitation during the present Korean action, the blind of all services are being transferred to the Blind Training Center, Hines, Illinois, under the auspices of the Veterans Administration. This transfer is effected as soon as the diagnosis of permanent blindness is established by a physical examination board. Experiences during the late war emphasized the importance of early rehabilitative measures in order that the typical phases of depression, and overcompensation might not occur, but that adjustment under the guidance of personnel trained in these problems might be realized. It is a tribute to the character of our blinded veterans and to the training they received that nearly every one is an acceptable member of his community and in many instances a leader in it.

Industrial. During the war years a great expansion occurred in the Navy industrial facilities. A visual safety program was enlarged and extended. The program, in the main, consisted of improvement in work efficiency and decrease in fatigue by improved illumination, the judicious use of color, the reduction of glare, and by fitting the intensity of lighting to the requirements of work. In addition, an eye-protection program was instituted. This program included the examination and, if indicated, refraction of all persons in eye hazardous occupations. Protective goggles are furnished in which is incorporated any necessary refractive correction. All other employees not in eye hazardous occupations are given a preliminary visual examination and, when defective vision is found, they are advised to contact their private physicians.

Training Program. There are five naval hospitals approved by the American College of Surgeons and the AMA for residency training in ophthalmology and otolaryngology. This, of course, means that the staff, the number of clinic and in-patients, the amount of surgery, and the teaching program in these five hospitals meets the standard requirements for residency training. One or more civilian consultants in the local community are on the staff of such naval hospitals. On the other hand, a number of naval medical officers hold university teaching appointments. A certain number of naval medical officers are given civilian residencies, or basic courses in graduate schools, for from one to three years. During the present emergency only personnel who have completed a tour of duty in the Korean theatre are eligible for civilian training. Presently 19 members of the Medical Department of the Navy are undergoing postgraduate training in ophthalmology or otolaryngology.

Certified Ophthalmologists. As of the 1st of April, this year, there were 25 board certified ophthalmologists in the Medical Corps of the Navy, all members of the Regular Service.

Certified Otolaryngologists. As of the 1st of April this year there were a total of 29 board certified otolaryngologists in the Medical Corps of the Navy. Of this number 28 were members of the Regular Service and one a member of the Reserve.

Navy medicine probably does not differ in essence from civilian medicine. Our problems and methods of handling them are basically the same. Some fields, such as traumatic surgery, perhaps are given greater emphasis than in civilian life and in other instances special opportunities for study and the development of efficient routines are made possible by the availability of large numbers of persons in a comparatively young age group. Anyway, I should like now to leave the eye and turn to a consideration of the ear.

OTOLARYNGOLOGY

Deafness has been a problem in the Navy, as it has been in civilian life. There were over 90,000 service-connected cases of disability due to a hearing loss of one degree or another sustained in the Armed Forces as of a year and a half ago. In an analysis of deafness cases in the late war, 40 per cent were considered to have had hearing impairments prior to entry into the service. This figure of 40 per cent was based largely on the patient's history and the findings on induction examinations. Ninety-three per cent of these were adjudged by the Veterans Administration to have had aggravation during service. This survey was based largely upon the history of the patient, since the induction examinations were not 100 per cent reliable because of the manner in which tests were performed. Unfortunate-

ly, unmonitored voice tests were usually the only tests used in mass induction examinations and were, moreover, often hastily performed by untrained technicians. The need is recognized by the Bureau of Medicine and Surgery for an accurate auditory record on entry into the service to determine what effect, if any, various types of naval duty have on hearing. The feasibility of group audiometry for all personnel entering the Navy is now being considered.

Etiology. Of the 60 per cent of deafness considered to have been primarily incurred in the service 26 per cent was ascribed to heavy firing, 15 per cent was due to nerve deafness, 10 per cent was due to otosclerosis, four per cent due to chronic suppuration, and the remaining five per cent to miscellaneous causes, such as meningitis, etc. The figure of 26 per cent due to acoustic trauma is probably high, for during wartime a large segment of the naval service is exposed to heavy firing either in training or actual warfare. In this analysis the patient's history was either the main or only criterion used to establish the diagnosis of deafness due to heavy firing.

I should like at this point to stray afield for a moment to comment briefly upon an observation I have made with respect to otitis during my several tours of sea duty. As all medical officers with any appreciable amount of sea duty must have observed, a sharp upsurge of external and middle ear involvements is practically certain to occur among the crew of a ship when that ship enters an area, generally in the tropics, where swimming over the side is permitted. With this outcropping of ear conditions the question of the water's being contaminated always comes up. Well, regardless of the purity or impurity of the water, it has been my observation, upon questioning a person who comes down to the sick bay with a running ear, following his having dived over the side or having been swimming in any manner, to find that the individual has, almost without exception, had previous trouble with his ear, and what has happened has simply been a reawakening of a "sleeping dog" so to speak. I had never seen an original ear involvement in the Navy directly attributable to swimming until my own son, who was then about ten years of age, developed an acute ear from swimming in a pool, and that I am sure was due to the fact that somebody had given him a face mask, following which he spent about ninety per cent of his time down at the bottom of the pool.

General or Side Effects of Deafness. The manner in which a patient reacts as a whole to a defect such as deafness may vary greatly. Recently deafened individuals often try to minimize or hide their defect. In order to maintain a conversation, they make strenuous listening efforts and tend to fill in gaps not heard by guessing or by pleasant affability. This sometimes leads to embarrassing situations and at best is very fatiguing and leads to nervousness and instability.

The resistance to recognizing and accepting the handicap of deafness is illustrated by the case of the hard of hearing senior officer who brought in his aide, a-i-d-e that is, for laryngeal examination bebecause he was unable to understand him.

Another type of reaction more often seen in cases of long-standing deafness is a withdrawal of interest and attention. Because trying to maintain a conversation is so unsatisfactory and fatiguing, these individuals become preoccupied with their own thoughts and often withdraw from, or avoid social contacts. They may not even hear their names called in a loud voice when not expecting a communication, but when their attention has been obtained, or their interest aroused, they may be able to hear at a much lower conversational level. This type of reaction is responsible for the old saying, "He's deaf all right, but he always manages to hear what he shouldn't."

Psychogenic Deafness. Persons with minimal or no hearing defects may develop psychogenic deafness as a result of the strains and frustrations of modern life. The Navy is not unique in producing such situations. The deafness, while present temporarily, solves an intolerable situation. The term "intolerable" is relative. To others it may be only monotonous or unpleasant. These people often develop dramatic cures when the situation which causes the deafness is cleared up or when they learn to live with it. Many of the newspaper reports about unusual or dramatic cures are probably of this type. Much is being said and written these days about psychosomatic medicine. Dunbar has defined the psyche and soma as representing two angles of observation. Our understanding of disease rests on pictures taken from these two angles and viewed

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stereoscopically. We are all alert to the possibility of emotion causal factors in nervous indigestion, tension headaches, etc., but many otologists ignore the possibility of emotional factors in deafness. During the war, especially at certain Army rehabilitation centers, this factor was not only recognized but may even have been over-emphasized. In the Russian army, during the late war, hysterical deafness was the most common war neurosis. It is not known whether the sounds these patients needed to blot out were those of battle or the propaganda of the the political commissars. Otologists are primarily concerned with symptoms relative to the ear and ordinarily do not probe into emotional backgrounds. Such factors should be considered, however, whenever the sum of signs and symptoms do not add up. If only organic pathology is present, a comparison of repeated and various tests results in no gross inconsistency. The only consistent finding in functional deafness is inconsistency. It is easy to fall into the error of concluding that all such discrepancies are due to malingering.

Malingering. There is nothing worse for the reputation of either the accused or the physician than a false imputation of simulation. Contrary to the usual impression, malingering is not common in the Armed Services. A malingerer may simulate deafness on the occasion of a single examination, for example, to escape service. To continue a pretense over long periods requires great application and much restricted activity. Such individuals probably have a personality disorder. Persons of normal personality structure usually pick a symptom of short duration, as for example, when a headache is claimed to avoid a dull social engagement.

Hysteria. I would like to emphasize that the signs of malingering and hysteria differ in no essential way. Even the motives in both conditions may be the same. Common motives are escape, desire for sympathy, and financial gain. The essence of the difference is insight. The malingerer knows full well that a symptom such as deafness is false; the hysteric is firmly convinced that he cannot hear and acts as a deafened individual even when free from observation. In malingering, inconsistencies are usually inconstant, whereas in hysteria they are characteristically constant and constantly inconsistent. The essence of the findings in hysteria is inhibition or negation. Thus, in unilateral deafness, for example, whenever a sound is more intense in the affected ear, he denies hearing. This is true even when the sound is so loud that he obviously hears it in the good ear. This makes the Stenger test uniformly successful in such cases. Otologists are seldom equipped to supervise the treatment of the functionally deaf. This is a problem for the psychiatrist. The otologist, however, should differentiate emotional from organic deafness and the more difficult cases in which both elements are present. Whenever emotional factors complicate the picture of organic deafness we speak of the emotional factor as a "functional overlay." In aural rehabilitation, we must guard against treating the emotionally deaf with hearing aids.

Rehabilitation—Hearing. From 1944 through 1946 over 3,000 Navy and Marine Corps personnel received aural rehabilitation at the Naval Hospital in Philadelphia and were discharged because of deafness. This figure does not include those discharged for ear diseases not causing a deafness handicap. To date, over 10,000 hard of hearing cases have been processed and over 5,000 hearing aids fitted at that center. The peak load in any one month was in July, 1945, when over 700 were being processed at one time. During the post-war years fewer than 100 cases of deafness per year have been discharged from the Navy and Marine Corps. During the period of the present emergency this figure will probably rise. The Navy pioneered in producing the modern concept of an aural rehabilitation center. During World War II it assembled an outstanding staff of non-medical hearing and speech specialists such as Drs. Koeppe-Baker, William Hardy, Eva Thompson and Miriam Pauls, and set up a program under the direction of an eminent otologist, Captain Francis Lederer. Special physical equipment was provided by the Central Institute for the Deaf and housed in a special sound-treated building. This program attained national and international recognition and has continued to function in post-war years. Many civilian centers, both in this country and abroad, are now being established along similar lines.

The principles established in the handling of deafened individuals may be enumerated as follows:

1. Accurate and repeated testing, including the

use of accurately monitored speech to establish the diagnosis and degree of hearing loss.

2. Psychological reorientation and acceptance of uncorrectible hearing defects.

3. Fitting of a suitable hearing aid. This includes instruction in proper care and wearing of the aid.

4. Auditory training to develop tolerance of amplified sound in cases of nerve deafness.

5. Speech reading to supplement hearing by aid in well-marked cases of hearing loss.

6. Speech correction, if present, in cases of long-standing deafness.

7. Vocational guidance and training.

The last is carried out usually by the Veterans Administration after discharge in the case of service personnel. The psychology of the patient is most important in both diagnosis and treatment. A hard-of-hearing patient once described his deafness as "always being on the wrong side of a plate glass window." This is probably a good description of the sense of isolation felt by the deafened and accounts for the moods of insecurity and suspicion which are so commonly encountered. Unlike the blind and crippled, the hard-of-hearing person, as you are all well aware of course, has no outward signs of disability and strangers are apt to confuse imperfect hearing with imperfect understanding. Experiences obtained in the aural rehabilitation program have highlighted the importance of treating the individual rather than his symptom, namely, deafness.

The first lesion of aural rehabilitation is acceptance of the fact that deafness is permanent and may even be slowly progressive. It is important that the patient stop looking for the miracle cure. On the other hand, he must be told that even though his deafness be progressive he will always be able to compensate for it with a hearing aid, and that he will do so simply by turning up the volume control of his instrument or procure an instrument of greater power. Herbert Spencer, who lived in a boarding house, would seat himself in the common living room only after carefully adjusting a pair of impenetrable ear muffs to his perfectly normal ears. The ability to hear is not always an asset and those afflicted with deafness should learn to appreciate the detachment which it makes easy. Thomas Edison believed that had he possessed normal hearing, the very sounds which he did so much to record, preserve and disseminate through his talking machine, would have so distracted him as to make impossible the mental concentration essential to his success in such an endeavor. What can't be cured can often be enjoyed. Cases who have had successful fenestration operations sometimes wistfully remark that they often wish that they could shut off their hearing as they did their aids before operation.

The second lesson is that deafness is not a shameful thing to be concealed whenever possible, or that social contacts should be restricted. We are not completely in accord with the tendency to hide the newer hearing aids. If the individual is so sensitive that he cannot bear to have his associates know that he has a hearing defect, we do not consider that he has completely adapted.

The third and most important lesson is that by combining the faculties of seeing and aided hearing, one's ability to communicate can be restored and thus can one, who by wearing a hearing aid becomes a successful person, be in the same social category as the successful person who wears glasses. In this way, a disability is reduced to a handicap at most, and a handicap is frequently a stimulus.

Auditory training is a relatively new concept. The failure of many individuals to adapt themselves to a hearing aid in the past was largely due to intolerance of amplified sound. A patient with a pure conductive type hearing defect is seldom a problem to fit with a hearing aid, because as soon as sound penetrates the conductive barrier, it is appreciated as a low threshold sound similarly as in the normal.

In well-marked nerve deafness, on the other hand, the phenomenon of recruitment causes acute distress because, as soon as sound becomes audible, it is appreciated as a loud sound. We are all familiar with the common sequence of "What did you say?" and then when the voice is raised moderately, "Well, you needn't shout at me." The hearing aid not only amplifies the sounds the patient wants to hear, but all extraneous background noises are similarly amplified out of their usual proportion. The purpose of auditory training is to accustom the patient not only to tolerate amplified sound, but to teach him to pick out what he wishes to hear from the

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din of extraneous noises, and to develop specific listening habits in which speech is literally pulled out of a melée of noises. To develop this faculty, normally amplified sounds are exaggerated by deliberately adding white noise or records of restaurant, street, or other crowd noises during the training period.

Hearing aids may be classified as minimum gain, moderate gain and maximum gain instruments. Obviously, if a patient has a severe hearing loss he should not even consider a minimum gain instrument. We in the Navy usually limit the patient's choice as far as power is concerned. The patient's further choice will largely be influenced by tonal quality. Some prefer crispness in an aid while others prefer mellowness and many simply prefer a certain aid over another for no reason that they can explain. Ease of operation or upkeep, ruggedness, compactness, color, size, etc., are all factors. Although certain aids have selective amplification or tilt, amplifying higher frequencies more than lower, the degree of tilt required, if any, is, in the experience of the Navy's otologists, seldom predictable from the audiogram. It has not been found feasible or necessary to fit aids on the theory of selective amplification alone. The combination of a defective ear and distorted sound does not add up to normal hearing. In comparing aids it is essential that the same well-fitting individually-molded earpiece be used, because comparison of performance is otherwise impossible. A poorly fitted earpiece may not only decrease efficiency by as much as 30 decibels, but may also produce an unpleasant feed-back squeal. There is no evidence that hearing aids either improve or impair basic hearing.

In cases of marked deafness of the mixed or nerve type, hearing aids do not usually give sufficient amplification of the higher frequencies. For complete intelligibility, lip reading must be used to supplement the aid. Since only about 30 per cent of English speech is visible from the lips, speech reading alone is an incomplete solution to the problem of communication. Since most vowels are well amplified and most consonants can be seen on the lips, the combination of speech reading and amplified hearing is the best answer in such cases.

Speech correction is practically never a problem in the recently deafened. If the patient hears his own voice with the help of his aid, he will usually modulate his voice properly without need for speech training. Wearing an aid as soon as difficulty in usual conversational situations is experienced is the best prophylaxis against the development of speech defects. Cases with profound or long-standing hearing defects usually need the help of a speech therapist to correct the typical "head in a barrel" voice.

I now come to make my final sortie into the field, and this time it is simply to observe that speech—talking—is a stunt. In other words, the vocal cords were, in the opinion of the anatomists and physiologists, I believe, not primarily intended as voice producing devices. We have simply come to use them for that purpose. In any event, it has been observed that the human being is the only animal whose means of communication has become so complicated that he frequently conveys an impression far at variance to his original intention.

RESEARCH

Now, with a word about research, it is my intention to fold my tent like the Arab and as silently steal away.

I simply want to say that medical endeavor in any field, it is my conviction, will remain alive and progressive commensurately with the degree to which it engages in research, and it is with genuine gratification that I can state that the Navy has a considerable research program in ophthalmology and otolaryngology, both in service establishments and in civilian institutions. Since much of this research is in the basic sciences and clinical problems of general interest, advances in these fields will enrich our knowledge and find application in many clinical and nonmilitary fields. The Navy is also represented in the Sensory Disease Study Section of the U.S. Public Health Service dealing with research grants throughout the country.

With present unmonitored conversational and whispered voice testing, an unknown number of subclinical and clinical cases of deafness are admitted with notations of normal hearing. When separated from the service, and often after only short periods, these men are eligible for pensions based on a service-connected disability. The application of audiometric or monitored speech testing awaits the development of an accurate, rugged, instrument suitable for group testing to act as a coarse

filter and the use of complete individual tests on those cases which fail the group test. The development of such an apparatus should have wide application to schools, factories, etc. Such a project is now being field tested at Camp Lejeune, North Carolina.

The Acoustic Laboratory of the U.S. Naval School of Aviation Medicine is experimenting with an Audio-Signal Delaying Unit as part of the investigations into the effects of acoustic environment upon speech. By recording the speaker's voice on audio tape and playing the voice back to the speaker's earphones a fraction of a second later, some startling effects are observed. The speaker, I'm told, becomes confused and stutters. While it has obvious practical use in discovering a malingerer there may be more important clinical applications.

New Books.

The Tompkins-McCaw Library of the Medical College of Virginia announces the following as some of their newer books which may be had under usual library rules:

Armstrong, Harry G.—Principles and practice of aviation medicine. 3d ed. 1952.

Beckman, Harry—Pharmacology in clinical practice. 1952.

Buchwald, E.—Physical rehabilitation for daily living. 1952.

Collins, V. J.—Principles and practice of anesthesiology. 1952.

Dieckman, William J.—The toxemias of pregnancy. 2d ed. 1952.

Elman, Robert—Surgical care: a practical physiological guide. 1951.

Faddis, M. O., & Hayman, H. M.—Care of the medical patient. 1st ed. 1952.

Kessler, Henry H.—Principles and practice of rehabilitation. 1950.

Schuler, Mowitz & Mayer—Medical public relations. 1952.

Sloan-Kettering Institute—Clinical problems in cancer research. 1952.

Von Oettingen, W. F.—Poisoning; a guide for the clinician. 1952.

Werner, August—Research in endocrinology. 1952.

First Aid Guide Now Available.

Useful tips on how to handle common first aid emergencies have been compiled in a pocket-sized manual by the AMA's Council on Industrial Health and the Bureau of Health Education. The booklet outlines adequate first aid instructions for everyday illnesses and injuries in a simple way. It is designed to guide those who have not received formal first aid training as well as to refresh the memories of the experienced. A list of suggested items for a first aid kit also is included.

Single copies are available without charge through either of these AMA departments. Quantity prices will be supplied on request by the Order Department.

XUM

A COMPARATIVE STUDY OF SUBTOTAL GASTRECTOMY WITH AND WITHOUT VAGOTOMY

J. WILL TANKARD, M.D.,
Newport News, Va.

This presentation must be considered as a preliminary report on only a few cases, for the ultimate results of any ulcer therapy must be based on follow-up studies extending over a period of many years.

HISTORY AND EVOLUTION OF SURGICAL TREATMENT

Since Billroth, who can be considered the father of gastric surgery, performed the first successful partial gastrectomy in 1881, 70 years ago, there have been many, many thousands done. In every decade since then the mortality incident to its performance has diminished. It is so low now that the benefits achieved when used on this chronically and acutely ill group of sufferers (a life long recurrent disease) far outweighs the one out of 50 or less chance they have of succumbing to the operation.[1] As evidence of this current low operative mortality I will cite the following gathered at random from the literature: Lewisohn[2] in 1945 pointed out that in experienced hands the mortality for gastric resection is only about 2%. In 1944 at the Mayo Clinic a mortality of 1.1% was reported on 368 partial gastrectomies. Bartels and Dulin in 1947 reported 1.6% in 121 successive partial gastrectomies. The Lahey Clinic did 1079 resections for duodenal ulcer in the period of 1937 to 1948 with only 26 deaths or 2.4% mortality. Glenn[1] showed 1.9% in 309 gastric resections. The natural history of the disease itself would give 2.03% mortality without definitive surgical treatment (Moore).[3] The operation was first done as a gastroduodenostomy (Billroth I) and then in 1885 the gastrojejunostomy or Billroth II operation was introduced. Local excision was used without success and then the procedure evolved through pyloroplasty, gastroenterostomy, antrectomy and finally extensive gastric resection. The question in our minds today is whether to go one step further and combine a vagotomy with the resection as a routine procedure; or just which cases are best to use the combination operation on. The most common type of partial gastrectomy used today, the Hofmeister modification of the Polya, is really just an improvement on the Billroth II. The modified Billroth I in conjunction with a vagotomy or alone is used to-day by some as an operation of choice for duodenal ulcer. So we see that all of our present day gastric surgery with the exception of vagotomy is really descended from Billroth.

Pavlov first demonstrated in 1910 that the cephalic phase of gastric secretion is abolished by vagotomy. In 1943 Dragstedt reintroduced and reawakened interest in vagotomy as a treatment for peptic ulcer. He and his co-workers found that vagotomy alone was not adequate and they now recommend a gastroenterostomy combined with vagotomy for duodenal ulcer; and partial resection for gastric ulcer.

Other surgeons such as Colp,[4] Walters,[5] Marshall, Hinton,[6] G. G. Miller, Francis Moore,[3] Sanders, Fallis,[7] Glenn,[1] Berg, and Gray believe that partial gastrectomy is the operation of choice for duodenal ulcer. For those characterized as the very high free acid group with painless hemorrhage many surgeons such as Colp,[4] Sanders,[8] Hinton, Walters,[5] Lahey, F. F. Hatch,[9] Fallis and Barron,[7] Kleitsch,[10] believe that a subtotal gastrectomy plus a vagotomy is the operation of choice. The combination of subtotal gastrectomy and infradiaphragmatic vagotomy for duodenal ulcer is not a new idea. In 1929 Klein published the results of left anterior vagotomy and gastric resection in 8 cases of duodenal ulcer with unusually high preoperative acid figures.

ETIOLOGY

1. Acid factor—It is well known that high acidity and peptic ulcer are associated more frequently than would occur merely by chance. The experimental production of ulcers by making hyperacidity and the cure of ulcers by reducing hyperacidity emphasize this factor. However, ulcer may occur in the absence of hyperacidity. Against this theory of acid causing ulcer, however, is the large number of people with hyperacidity with no ulcer. Some have even postulated that the ulcer came first and the high acidity secondarily,[11] stating that it is a characteristic of mucous membrane to secrete more when irritated, and citing as examples the mouth in oral ulcer and

*Read in part October 9, 1951 at the annual meeting of The Medical Society of Virginia at the Cavalier Hotel, Virginia Beach.

the rectal mucosa in fissures, etc. Supporting this theory is the fact that an experimentally produced ulcer made by injecting a corrosive into a dog's stomach will bring about hyperacidity.

2. Motility factor—The areas that move most in digestion are the distal part of the stomach and the duodenal cap. This is where the food "traffic" is heaviest and where most ulceration occurs. The vagi control both the peristalsis and the acid secretion in this region.

3. Neurogenic factor—Peptic ulcers in central nervous system lesions, as reported and studied by Cushing; the frequency of personality disorders in ulcer patients, and the known functions of the vagi in controlling the psychic phase of gastric secretion, all emphasize this factor in etiology.

4. Tissue resistance factors—There is a constitutional predisposition and a definite familial tendency which point to some people having more susceptibility to it than others.

5. Vascular factors—This is borne out by the frequently found thrombosed artery near the base of an ulcer; the experimental production of ulcers by tying arteries and giving vasospastic drugs and the aggravation of ulcers by nicotine, itself a vasospastic drug.

6. Miscellaneous factors such as histamine production in burn cases; aggravation of ulcers by administration of ACTH and cortisone and other angles yet to be studied and proven.

INDICATIONS

The criteria for necessity of the surgical treatment of peptic ulcer in the cases herein reported were those generally accepted and recognized by authorities, namely, (1) Intractability or failure of adequate medical management. (2) Hemorrhage of a chronic recurring nature or of a severe degree if acute. (3) Impending perforation or history of perforation one or more times. (4) Obstruction of the pylorus or duodenum so that food cannot properly pass into the lower duodenum. (5) Suspicion or fear of malignant change. All of these cases reported herein fulfilled one or more of these criteria. They were done from 4½ years ago to 6 months ago. Table 1 shows the 28 cases operated upon with relevant facts and data. Four of the cases or 14% had had previous perforation, 14 or 50% had obstruction to a marked degree, 13 or 46% had had hemorrhage. As the average duration of symptoms for the group as a whole is 14⅓ years they were certainly chronic and intractable. Two of the gastric lesions were highly suspicious of having undergone malignant change, but fortunately in neither instance had it definitely occurred. One case was called lymphosarcoma by four pathologists. Four called it multiple gastric ulceration. So far it appears to have been benign.

AGE DISTRIBUTION: The average age for the group was 40½ years. The distribution by decades is shown in table No. 2.

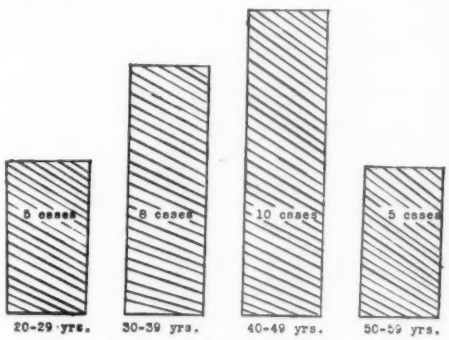

Table no.2 AGE DISTRIBUTION BY DECADES

PROCEDURE

An Abbott-Rawson tube was placed in the stomach just before surgery. At the appropriate time in the operation this was fed through the gastrojejunal anastomosis. The anaesthesia in all except two cases was given as endotracheal. Pentothal was given for the induction and this was switched to cyclopropane or nitrous-oxide-ether, supplemented by curare and pentothal. Only inhalation anaesthesias were used. Nurse anaesthetists were used on 21 cases, and physician anaesthetists on 7 cases. If a vagotomy was done this was proceeded with first. All vagotomies were done subdiaphragmatically as it was not done unless it was combined with a subtotal gastric resection. (A combined thoraco-abdominal procedure was not needed for this and it was thought unwise to do the double operation as a transthoracic transdiaphragmatic procedure.) A long median or paramedian upper abdominal incision was made and the vagotomy carefully accomplished according to the technique of Dragstedt and associates.[12] This was done prior to the resection for two reasons:—namely, the better mobilization of the stomach for the subsequent gastrectomy and the prevention of me-

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TABLE

28 CASES OF PEPTIC ULCER TREATED BY SUBTOTAL GASTRECTOMY,

IDENTIFICATION		Sex	Age	Marital Status	Date of Operation	Duration of Symptoms	Previous Abdominal Surgery	Previous Perforation	Hemorrhage	Obstruction
1. G.B.S.	73088	F	51	M	3-25-47	10 yrs.	No	No	Yes	No
2. H.R.	78149	F	45	M	12-24-47	4 yrs.	6 oper.	No	Yes	No
3. C.C.	79024	M	29	S	2-10-48	4 yrs.	No	No	No	No
4. F.R.	79751	M	28	M	3-29-48	7 yrs.	Hernia	No	Yes	No
5. W.M.	80208	M	40	M	4-28-48	18 yrs.	No	No	Yes	Yes
6. H.M.	80639	M	35	M	5-19-48	10 yrs.	Yes, ulcer	No	No	Yes
7. R.D.	104721	M	55	M	8-25-48	20 yrs.	Yes	No	Yes	No
8. R.B.	82419	M	48	M	8-26-48	8 yrs.	Yes	No	No	Yes
9. M.J.	106091	F	23	M	11- 4-48	3 mos.	Yes	No	No	No
10. G.C.C.	85596	M	31	M	2-18-49	3 yrs.	Yes	Yes	Yes	Yes
11. F.M.	86732	M	32	M	4-20-40	12 yrs.	Append.	No	No	No
12. R.C.	89113	M	49	S	8-24-49	9 yrs.	No	No	No	No
13. J.G.	91893	M	39	M	1-10-50	6 yrs.	Append.	No	Yes	No
14. L.G.	92002	M	41	M	1-25-50	3 yrs.	Append.	No	No	No
15. T.I.	93655	M	41	M	4- 5-50	6 yrs.	No	No	No	No
16. D.J.	94067	M	41	M	4-27-50	12 yrs.	No	No	No	Yes
17. R.K.	94094	M	39	M	4-29-50	4 yrs.	No	No	Yes	Yes
18. J.B.	94552	M	26	S	5-24-50	10 yrs.	Append.	No	No	No
19. W.C.	94974	M	45	M	6-14-50	15 yrs.	Yes	Yes	Yes	Yes
20. C.W.R.	95990	M	38	M	8- 5-50	14 yrs.	Append.	No	Yes	Yes
21. M.M.	96070	F	59	M	8-15-50	3 yrs.	No	No	Yes	Yes
22. J.F.	96887	M	30	M	9-21-50	10 yrs.	Yes	Yes	No	No
23. L.W.	97237	M	59	M	11- 1-50	25 yrs.	Yes, ulcer	No	Yes	Yes
24. J.B.B.	98445	M	52	M	12- 6-50	30 yrs.	Append.	No	No	No
25. E.M.	89772	M	48	M	12-28-50	21 yrs.	No	No	No	Yes
26. R.McG.	99027	M	42	M	1-17-51	15 yrs.	Append.	No	No	Yes
27. C.B.	99916	M	33	M	3- 1-51	6 yrs.	No	No	No	Yes
28. J.J.	101314	M	29	M	4-24-51	14 yrs.	No	Yes	Yes	Yes
Totals or averages		6F 22M	40 yrs.	25M 3S		14⅓ yrs.	11 no 17 yes	24 no 4 yes	15 no 13 yes	14 no 14 yes

No. 1

HALF OF WHICH ALSO HAD A CONCOMITANT VAGOTOMY

Postop. Days in Hosp.	Complications	Type Ulcer	Type of Tube Used	Highest Temperature	Vagotomy Done Also	Antibiotic or Sulfa Therapy	Highest Total Acidity	Plasma Used	Amigen Used
20	No	Duo	Levine	100.6	No	Penicillin	62	1	1-vein
11	No	Gast	Levine	101.4	No	Sulfa, penicillin	10	0	0
14	No	Gast	Levine	100	No	Penicillin	85	2	0
14	Yes	Duo	None	104.2	No	Sulfa, penicillin	58	0	0
11	No	Duo	None	99.8	No	None	7	0	2-vein
11	No	Duo	None	99.8	No	Penicillin	39.4	0	2-vein
70	Yes	Duo	Levine	105	No	Strepto., penicillin, sulfadiazine	50	4	1-vein
17	Yes	Duo	None	102	No	None	23	0	1-vein
12	No	Duo	Abbott Rawson	100.8	No	Penicillin	16	0	2-tube
9	No	Duo	Abbott Rawson	102.4	No	Strepto., penicillin, sulfadiazine	54	0	3-tube
11	No	Duo	Levine	99.8	No	Strepto., penicillin		0	3-tube
12	No	Duo	Abbott Rawson	100	No	Penicillin	53	0	1-tube 2-vein
11	Slight	Duo	Abbott Rawson	100.8	No	None	88	0	4-tube
12	No	Duo	Abbott Rawson	101	Yes	Penicillin	94	0	4-tube 3-vein
11	No	Both	Abbott Rawson	101	Yes	Penicillin	66	0	6-tube
11	No	Duo	Abbott Rawson	98.8	Yes	Penicillin	88	0	6-tube
11	No	Duo	Abbott Rawson	101	Yes	Penicillin	42	0	6-tube
10	No	Duo	Abbott Rawson	99.6	Yes	None	43	0	4-tube
10	No	Duo	Abbott Rawson	100.6	Yes	None	50	0	5-tube
11	No	Duo	Abbott Rawson	100	Yes	Aureomycin	72	0	3-vein
11	No	Duo	Abbott Rawson	101.4	Yes	None		0	3-tube
12	Yes	Duo	Abbott Rawson	102.4	Yes	Aureo., penicillin	160	0	3-tube
12	No	Duo	Abbott Rawson	99	Yes	Penicillin	110	0	2-tube
13	Yes	Gast	Abbott Rawson	100.6	Yes	Penicillin	55	0	3-tube
11	No	Duo	Abbott Rawson	99	Yes	Penicillin	24	0	2-tube
10	No	Duo	Abbott Rawson	100	Yes	Penicillin	25	0	2-tube
13	No	Duo	Abbott Rawson	100	No	Penicillin	130	0	2½-tube
13	No	Duo	Abbott Rawson	99	Yes	Penicillin, aureo.	15	0	2-tube
14 days	22 no 6 yes	24 duo 1 both 3 gast	5 Levine 4 none 19 Abbott Raw.	100.5	14 yes 14 no		58.5		

a b c

TABLE No. 3
X-RAY FILMS SHOWING TYPICAL CASE

(a) Before resection (showing dilatation from obstruction).
(b) After resection, showing 3/5 of stomach to have been removed. There was no noticeable difference observed in the peristaltic movements of the remaining portion of stomach in the cases done without vagotomy from those done with vagotomy. In each the movements were very markedly reduced from normal.
(c) Spot films showing the uphill gradient of the jejunum as attached to the gastic remnant in the iso-peristaltic modified Hofmeister anastomosis. This serves to delay emptying of the stomach and jejunal pouch, even in the presence of a large stoma which is provided to give easy reflux of jejunal contents into the stomach.

diastinitis by the introduction of infective material after handling of the stomach. Following the removal of approximately 3/5 of the stomach and meticulous closure of the duodenum, gastrointestinal continuity was effected by a termino-lateral gastrojejunostomy of the Hofmeister type. The stoma was made 3cm. in diameter and the jejunum was tacked over the closed portion of the stomach, on the lesser curvature side, the line slanting obliquely upward to patient's right toward the cardia. This makes for slower emptying of the stomach and jejunum. The anastomosis was made anterior to the colon, proximal loop to greater curvature, distal loop to lesser curvature. The anastomosis was done very close to the ligament of Treitz—only 5 to 8 inches away. If the omentum is large, split it or partially remove it. If malignancy is suspected remove it entirely.*

POST-OP CARE—The Abbott-Rawson tube is left in place until bile appears in the fluid and peristalsis returns which usually occurs about 48 hours postoperatively. Amigen or homogenized milk is dripped at a rate of about 20 drops per minute into the jejunum beginning 24-36 hours after operation. The other part of the double lumen tube serves to keep the gastric remnant empty by the application of suction. It is not absolutely necessary to use the Abbott-Rawson tube, however, as in this series a Levine Tube was used five times being passed only into the stomach and used for suction, and in 4 cases no tube at all was used. All cases did well but I definitely prefer the Abbott-Rawson tube as its dual action is exactly what one wants. It was used in the last 19 cases.

Blood was given during and after operation as indicated to prevent shock and to keep the RBC and Hb levels within normal limits. It was given preoperatively also in sufficient quantities to bring the blood level up to normal before surgery. This varied considerably from case to case depending on how much bleeding had been occurring from the ulcer. The average number of transfusions for the group as a whole was only 1½ per person and 18 cases had only one transfusion.

Water by mouth was started in small amounts the night after operation—just enough to quench thirst—and the next day allowed in ½ ounce amounts every half hour if desired. Most of the intravenous fluids are given as 5% gluc. in dist. water—only 1000 cc of 5% in Ringers given per 24 hours. Vitamins B and C are given in adequate quantities in intravenous fluids. All are made to take leg exercises and deep breathing exercises from the first day and are encouraged to get out of bed the day after operation. They are compelled to get out of bed and walk by the second or third day after operation.

After water by mouth has been given in increased amounts and tolerated well, milk is given. Then cooked cereals, ice cream, jello, and other soft foods are rapidly added to the diet. They are fed often, getting four meals at 8 AM, 12 N, 4 PM and 8PM and nourishment in between from 6 AM to 10 PM.

*Occasionally in barium enema studies afterwards the transverse colon may show as slightly compressed in this region. Case 1 is such a case. At a neighboring hospital this person was operated upon for a carcinoma of the transverse colon due to this x-ray finding. No malignancy was found at operation.

The usual case in spite of this will lose about 5 to 7 pounds during his hospital stay.

We formerly used amigen or a similar protein intravenously. This was done on 7 cases but since learning that this intravenous protein does not supply the body protein until the caloric requirements of the body have first been met we have discontinued using it.

Antibiotics were used postoperatively in most cases. In 6 cases however, neither antibiotics nor sulfa drug was used. Penicillin was used in 21 cases, streptomycin in 3 cases, aureomycin intravenously in 3 cases and sulfadiazine intravenously in 3 cases.

MORBIDITY

The highest temperature in any one case was 105. This occurred in a case that developed bile peritonitis from a coincident cholecystectomy. At autopsy several months later it was found that she had a carcinoma of her pancreas with generalized peritoneal carcinomatosis. It was thought that the carcinoma of the pancreas blocked the common duct and thereby produced bile backflow from the biliary fossa, probably from an accessory cystic duct. She recovered sufficiently to go home and several months later after two more operations she succumbed.

Several cases had as their highest temperature 99 and in 13 cases the temperature did not go over 100. The average highest temperature for the group was only 100.7.

Atelectasis occurred in 2 cases. This gave them an elevation of 102 and 104 respectively with coughing and dyspnoea, but quickly responded to conservative treatment. An oxygen tent was not needed in these two cases or in any cases of the series except the bile peritonitis from carcinoma of the pancreas case.

One hematoma of the wound occurred. The clot was removed and the skin and fat resutured in the patient's room using local anaesthesia. Months later a calcified mass formed in the rectus muscle. This was removed and was reported as "calcified cicatrix". I considered it a myositis ossificans. Dr. R. L. Sanders of Memphis has had several such "ribs", as he calls them, form following gastric resections (Pathogenesis unknown).

Phlebitis of antecubital vein from infusion—1 case. Respiratory depression from anaesthesia—1 case. This patient was given artificial respiration from the anaesthesia machine for 2 hours after operation and then his own respiratory mechanism took over. There were no cases of thromboembolism or wound dehiscence, no cases of postoperative hemorrhage into the intestinal tract, and no cases of intestinal or stomal obstruction, leakage of duodenal stump or ordinary bacterial peritonitis. The only peritonitis was the above mentioned case of bile peritonitis associated with the hidden carcinoma. In fact it may be said that with the exception of this one case which is in fact a delayed mortality, there was practically no morbidity at all. The usually listed complications have been absent, particularly is it to be noted that there were no instances of duodenal stump leakage or hemorrhage into the lumen of the stomach or bowel.

RESULTS

The results of gastric resection alone for duodenal ulcer are well known from the postoperative study of literally thousands of cases by many men over a period of many years.[13] Excellent results are obtained in 85 to 90%. The evidence of recurring ulceration is low—Starlinger of Vienna reported it to be 2.5% in a collected series of 25,647 cases. American surgeons reported approximately the same figure. One bad side effect is hypochromic anemia following subtotal gastric resection which according to some authorities occurs in 5 to 9% of cases.[14] For the purpose of this report these 28 cases have been critically studied collectively and individually and have been studied as two series. Those treated by subtotal gastrectomy alone comprises one and those treated by subtotal gastrectomy with a concomitant vagotomy the other. The first 13 were handled by the gastric operation alone. Of the next 15 cases all except one was treated by the combined procedure, thus balancing up the series to 14 treated each way. We have compared the results largely by personal interviews, by questionnaires, by the performance of preoperative gastric analyses on 26 of the 28, and the performance of postoperative gastric analyses on 25 of the 27 surviving to this date. The results of these gastric analyses pre- and postoperative, and divided into the two groups are shown in tables 4 and 5. The same thing is shown for the average of the group on graphs accompanying. (See table No. 6). A slightly greater diminution of both free and combined acid is seen in the group that had con-

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TABLE No. 4

SUBTOTAL GASTRECTOMY WITHOUT VAGOTOMY
PREOPERATIVE GASTRIC ANALYSIS

INITIAL	Case No.	Date	Fast Free	15′ Free	30′ Free	Fast Comb.	15′ Comb.	30′ Comb.	Fast Total	15′ Total	30′ Total
Mrs. G. B. S.	73088	3-24-47	21	44	40	22	18	10	43	62	50
Mrs. R. H.	78149	12-15-43	0	0	0	10	3	6	10	3	6
Mr. C. C.	79024	1-19-48	58	32	59	25	8	13	83	40	72
Mr. F. R.	79751	5-23-47	0	52	50	15	9	8	15	61	58
Mr. W. M.	80208	4-23-48	0	.....	.....	7	.....	.....	7	.....	.....
Mr. H. M.	80639	5-12-48	20	0	32	15	14	8	35	14	40
Mrs. R. D.	104721	8-24-48	12	10	34	18	10	16	30	20	50
Mr. R. B.	82419	8-17-48	0	0	10	13	12	14	13	12	24
Mrs. M. J.	106091	11- 3-48	0	0	0	4	6	16	4	6	16
Mr. G. C. C.	85596	1- 5-49	38	22	30	16	8	4	54	30	34
Mrs. F. M.	86732	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mr. R. C.	89113	8-23-48	16	24	49	3	2	4	19	28	53
Mr. J. G.	91893	1- 9-50	34	50	54	6	18	34	40	68	88
Mr. C. B.	99916	2-24-51	54	46	40	76	58	72	130	104	112
Average Figure			19½	23.3	33	18	14	17	37	40	50

SUBTOTAL GASTRECTOMY WITH VAGOTOMY
PREOPERATIVE GASTRIC ANALYSIS

INITIAL	Case No.	Date	Fast Free	15′ Free	30′ Free	Fast Comb.	15′ Comb.	30′ Comb.	Fast Total	15′ Total	30′ Total
Mr. L. G.	92002	1-20-50	36	68	70	24	15	24	60	83	94
Mr. T. I.	93655	3-23-50	16	32	50	28	28	16	44	60	66
Mr. D. J.	94017	1-16-50	88	36	68	22	3	7	110	39	75
Mr. R. K.	94094	4-28-50	10	19	30	10	19	12	20	38	42
Mr. J. B.	94552	5-23-50	17	18	31	23	10	12	40	28	43
W. C.	94974	6-13-50	21	15	40	10	12	10	31	27	50
Mr. C. W. R.	95990	8- 4-50	0	32	14	16	40	20	16	72	34
Mrs. M. M.	96070	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mr. J. F.	96887	9-20-50	32	24	64	52	20	96	84	54	160
Mr. L. W.	97237	7-29-50	102	65	40	8	15	30	110	80	70
Mr. J. B. B.	98445	6-15-50	26	40	30	20	14	22	46	54	55
Mr. E. M.	98772	12-27-50	0	12	0	12	12	15	12	24	15
Mr. R. McG.	99027	1-15-51	2	5	1	12	20	14	14	25	15
Mr. J. J.	101314	9-17-49	0	0	0	15	10	15	15	10	15
Average Figure	.....	.....	27	32	34	19	17	23	46	46	56

comitant vagotomy. However this group has been operated upon only 12 months on the average, while the other group has been done 32 months.*

The results of the questionnaires and personal interviews are shown in tables 7 and 8. To the question—"Have you had any returns of your former symptoms?", all of the subtotal gastrectomy *with* vagotomy answered "no". All except one of the subtotal gastrectomy *without* vagotomy group said "no". This case was one that developed recurrent pain about 4 months after operation. She showed no free acid in her gastric analysis at this time. A transthoracic vagotomy was then done upon her but without relief of symptoms. She was then seen and studied at Johns Hopkins Hospital. X-ray was negative for marginal ulcer. No ulcer was seen on gastroscopic examination. Moreover her pain was not of an ulcer type, and she was finally considered a psychoneurosis and treated by a psychiatrist. She was then operated upon at Duke University and no ulcer found. She was again referred to a psychiatrist.

*Our postoperative gastrics being done with 70cc of 7% alcohol test chiefly the gastric phase of secretion. If they had been done with a very appetizing meal it would also have tested the cephalic (vagus) phase. The insulin test checks primarily the vagus stimulating effect. The histamine test is an absolute test which brings out acid unless all acid secreting cells have been removed. Histamine is thought to act directly on the parietal cells, having a selective affinity for them. The secretory response to histamine is not affected by either vagotomy or atropine[15]. As part of the fundus remains after these operations there are parietal cells remaining and naturally the histamine test would show acid. It as a test for these cases is therefore not applicable.

To make a more critical analysis we then made more detailed inquires for certain symptoms. To the question—"Do you have any pain, dyspepsia, or indigestion following meals," we received three positives in each group. To the question, "Do you ever get a fainty or weak feeling soon after eating," we received 5 positives in the first group and 6 positives in the vagotomy group. Some of these people said, "very slight" or "very rarely," or "occasionally" and the symptoms were never mentioned voluntarily by them, but only when elicited by direct questioning in personal interviews. It was therefore not a serious symptom to them. There is only one case that it can in any way be considered as bothersome and he was done with a vagotomy. This case has been done recently and with time it will undoubtedly improve. I do not think this case represents a true dumping syndrome but only rapid carbohydrate absorption.

The matter of pre- and postoperative weight was ascertained. The postoperative weight was considered as the weight at the present time. In the group without concomitant vagotomy there were five who weighed less than before operation, four who weighed more, and four who weighed the same. (1 deceased). These were on the average 32 months after operation. Their total weight as a group before was 1892 and afterwards 1884, a loss of 8 pounds.

TABLE No. 5

SUBTOTAL GASTRECTOMY WITHOUT VAGOTOMY
POSTOPERATIVE GASTRIC ANALYSIS

INITIAL	Case No.	Time Interval (Months)	Date	Fast Free	15′ Free	30′ Free	Fast Comb.	15′ Comb.	30′ Comb.	Fast Total	15′ Total	30′ Total
Mrs. G. B. S.	73088	54½	8- 9-51	0	0	0	15	qns	17	15	qns	17
Mrs. H. R.	78149	43½	8- 7-51	0	0	0	36	qns	qns	36	qns	qns
Mr. C. C.	79024	38	3-17-51	16	10	25	20	14	28	36	24	53
Mr. F. R.	89751	51	8-13-51	0	0	0	0	4	4	0	4	4
Mr. W. M.	80208											
Mr. H. M.	80639	39	8-14-51	0	0	0	36	13	qns	36	13	qns
Mrs. R. D.	104721											
Mr. R. B.	82419	36	8-17-51	0	10	14	14	20	25	14	30	39
Mrs. M. J.	106091	7	6- 3-44	0			6			6		
Mrs. G. C. C.	85596	30½	7-18-51	0	qns	0	30	qns	20	30	qns	20
Mrs. F. M.	86732	28	8-11-51	0	0	20	23	18	30	23	18	50
Mr. R. C.	89113	35½	8- 9-51	0	0	0	19	18	18	19	18	18
Mr. J. G.	91893	19	8- 8-51	0	1	10	26	13	28	26	12	38
Mr. C. B.	99916	½	3-15-51	0			0			0		
Average Figure		32		1	2	7	19	14	21	20	15½	30

SUBTOTAL GASTRECTOMY WITH VAGOTOMY
POSTOPERATIVE GASTRIC ANALYSIS

INITIAL	Case No.	Time Interval (Months)	Date	Fast Free	15′ Free	30′ Free	Fast Comb.	15′ Comb.	30′ Comb.	Fast Total	15′ Total	30′ Total
Mr. L. G.	92002	18½	8-11-51	0	0	0	13	14	15	13	14	15
Mr. T. I.	93655	17	8-21-51	0	0	0	30	20	18	30	20	18
Mr. D. J.	94017	6¾	8- 8-50	0	9	15	0	3	6	0	12	21
Mr. R. K.	94094	15½	8-10-51	0	0	0	20	13.6	15.4	20	13.6	15.4
Mr. J. B.	94552											
W. C.	94974	13¾	8- 3-51	0	0	0	18	12	14	18	12	14
Mr. C. W. R.	95990	11¾	7-26-51	0	0	4	20	26	28	20	26	32
Mrs. M. M.	96070	11½	7-26-51	0	0	2	27	20	28	27	20	26
Mr. J. F.	96887	10½	8- 8-51	14	0	0	40	20	qns	54	20	qns
Mr. L. W.	97237	12½	8-14-51	0	0	0	54	18	qns	54	18	qns
Mr. J. B. B.	98445	13	7-13-51	24	5.4	18	51.2	20	30	75.2	25.4	48
Mr. E. M.	98772	9	8-18-51	0	0	0	40	30	24	40	30	24
Mr. R. McG.	99027	6½	8- 1-51	0	0	0	21	20	21	21	20	21
Mr. J. J.	101314	6	8-30-51	0	0	0	60	24	18	60	24	18
Average Figure		12		3	1	3	30	18½	20	33	20	23

XUM

In the gastrectomy with vagotomy group there were seven who weighed more, four who weighed less, and three who weighed the same. Their aggregate weights were 2169 pounds before operation, 2221 after operation, a gain of 52 pounds for the group as a whole. These were on the average 12 months after operation. This refutes the oft stated criticism of failure to maintain weight after gastric resection.

When we gave the patients a more specific question classifying the result of their operation, 3 in the "*with* vagotomy" group said "they were greatly benefited but not completely cured", 11 were completely cured. In the "*without* vagotomy" group two said "greatly benefited but not completely cured", one said "no benefit", 10 were completely cured and one dead.

There were no cases of diarrhoea, but several were no longer bothered with a preexisting bad constipation.

There therefore seems to be a slight advantage in the concomitant vagotomy as shown by a slightly greater diminution of free acid and total acidity, better body weight and slightly better subjective symptoms. Considering the cases as a whole, and excluding the one case that died of another disease, it may be said that a good result was obtained in 26 out of 27 cases, or 96.3%.

RATIONALE OF THE COMBINED OPERATION

One accomplishes by subtotal gastrectomy with vagotomy

1. By removing the antrum the hormonal mechanism (gastrin) is entirely eliminated.

2. By resecting also the greater part of the fundus most of the acid secreting and pepsin secreting areas are removed, thus decreasing the capacity of the stomach to secrete HCL and pepsin from whatever stimulus.[16].

3. More rapid emptying rate of the stomach remnant due to the larger stoma and the direct straight drop for the food which therefore is unable to make full use of its remaining secretory capacity from direct stimuli during the gastric phase.

4. Maximal neutralization of the free HCL still present in some cases by an increased regurgitation of alkaline duodenal juice, and by the profuse occurrence of mucous. (Boyd has adequately shown that in the normal stomach, during the latter part of digestion, acidity is diminished by the reflux of bile and alkaline juices through the pylorus.)

5. Atrophy of disuse of the parietal cells due to the elimination of the gastrin stimulus.

6. By section of the vagus nerve:
   (a) Complete elimination of the cephalic phase of gastric secretion.
   (b) Interdigestive acidity is markedly reduced

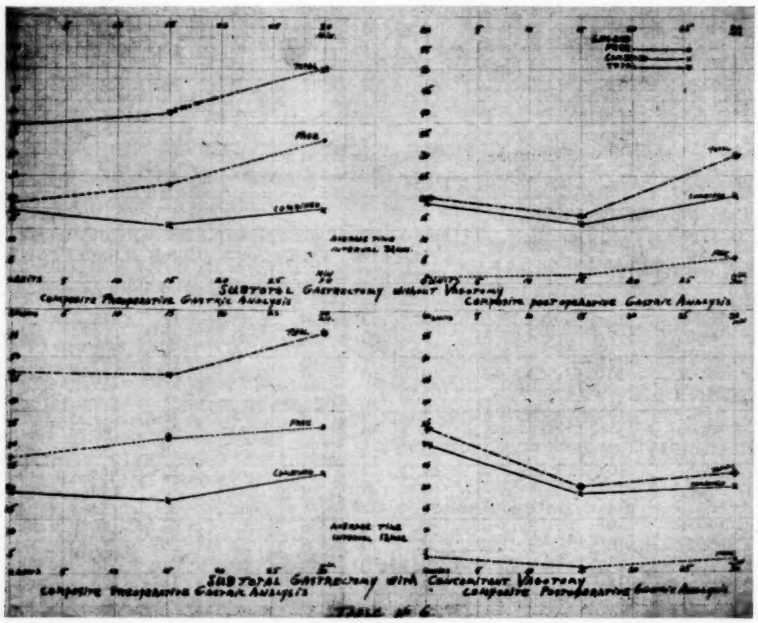


TABLE No. 7

14 CASES SUBTOTAL GASTRECTOMY WITHOUT CONCOMITANT VAGOTOMY—RESULTS OF QUESTIONNAIRE

	Mrs. G.B.S. 73088	Mrs. H.R. 78149	Mr. C.C. 79024	Mr. F.R. 79751	Mr. W.M. 80208	Mr. H.M. 80639	Mrs. R.D. 104721	Mr. R.B. 82419	Mrs. M.J. 106091	Mr. G.C.C. 85596	Mrs. F.M. 86732	Mr. R.C. 89113	Mr. J.G. 91893	Mr. C.B. 99916	Comments
Have you had any return of former symptoms?	No	No	No	No	No	No	Died	No	Yes	No	No	No	No	No	1 died 1 with symptoms
Is there any pain, dyspepsia, or indigestion following meals?	No	No	Yes	No	No	No		No	Yes	No	No	Occas.	No	No	3 yes
Do you ever get a fainty or weak feeling soon after eating?	Yes	Nausea	No	Occas.	No	No		Yes	No	No	Occas. nausea	No	No		5 cases that get rapid cho. absorption
Weight before operation	136	150	167	152	141	140		151	138	132	133	127	185	140	1892 total
Weight after operation	100	150	167	152	150	190		133	128	133½	125½	120	185	150	1884 total
How would you classify the result? Completely cured	Yes	Yes	Yes	Yes	Yes	Yes				Yes		Yes	Yes	Yes	10 yes
Greatly benefited, but not completely cured								Yes			Yes				2 yes
Improved only															
No benefit from operation									Yes						1 yes

TABLE No. 8

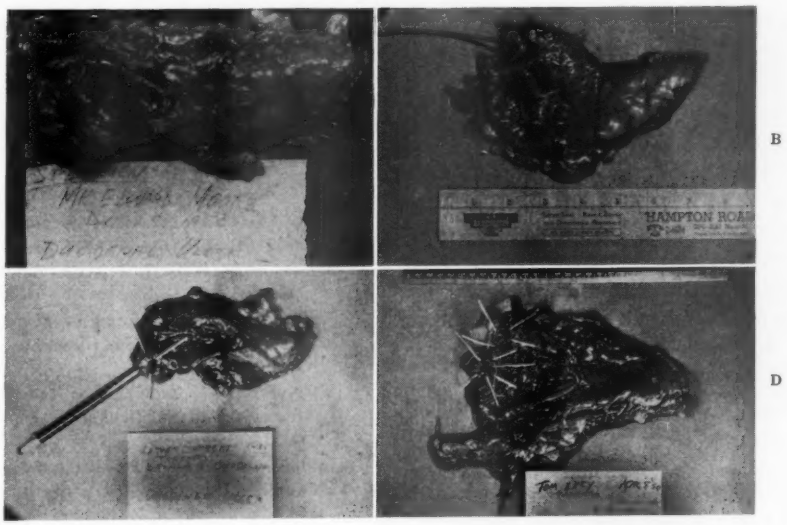
14 CASES SUBTOTAL GASTRECTOMY WITH CONCOMITANT VAGOTOMY—RESULTS OF QUESTIONNAIRE

	Mr. L.G. 92002	Mr. T.I. 93655	Mr. D.J. 94067	Mr. R.K. 94094	Mr. J.B. 94552	W.C. 94974	Mr. C.W.R. 95990	Mrs. M.M. 96076	Mr. J.F. 96887	Mr. L.W. 97237	Mr. J.B.B. 98445	Mr. E.M. 98772	Mr. McG. 99027	Mr. J.J. 101314	Comments
Have you had any return of former symptoms?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	100% cured
Is there any pain, dyspepsia, or indigestion following meals?	No	Occas. pain	No	No	No	No	No	No	Occas. indig.	No	Sl. pain	No	No	No	3 with slight trouble
Do you ever get a fainty or weak feeling soon after eating?	No	No	No	No	No	Very rarely	Very rarely	No	Occas. at night	Yes	No	No	Yes	Yes	6 cases that get rapid cho. absorption
Weight before operation	140	227	145	153	143	139	170	111	162	136	193	158	152	140	2169 total
Weight after operation	160	227	145	142	144	146	181	146	170	136	179	152	142	155	2221 total
How would you classify the result?															
Completely cured	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes			10 yes
Greatly benefited but not completely cured				Yes		Yes							Yes	Yes	4 yes
Improved only															
No benefit from operation.															

by vagotomy as shown by night secretion studies.[16]

(c) Uvnal in 1942 showed in dogs that impulses from the vagus released the hormone gastrin which stimulated the production of acid.

(d) By section of the vagi the motor activity of the stomach is diminished, and the responsiveness of the parietal cells to all stimuli is diminished, either direct or central.



SOME TYPICAL PHOTOGRAPHS OF SPECIMENS REMOVED AT OPERATION

A. Typical large duodenal ulcer. Twenty year history. (Case 25)
B. Typical duodenal ulcer. Ten year history. (Case 6)
C. Typical duodenal ulcer. Three year history. (Case 14)
D. Combination of duodenal and gastric ulcers in a case with a six year history. (Case 15)

(e) The intestinal phase of gastric secretion (the secretagogue effect) (the products of digestion such as peptones and amino-acids) is partially affected as the response to these stimuli is proven to be reduced by vagotomy, and it is inhibited by the administration of atropine (Babkin 1944).[17]

So cutting the vagi may work on both the psychic and hormonal routes. However months after vagotomy there is noted a gradual "escape" from its effects.

7. If the resection is technically difficult dividing the vagus fibers permits more adequate mobilization facilitating a higher resection.

As Regards Gastric Ulcer in Contradistinction to Duodenal Ulcer

The chief problem in gastric ulcer is the possibility of cancer developing. For this reason gastric resection is the operation to do for gastric ulcer. Vagotomy alone is contraindicated because it stops the pain, masks the symptoms, leaves the disease process in situ for the possible growth of cancer which is thought to occur in 10% of ulcers that are considered benign (Welch).[18] Dragstedt and associates no longer use vagotomy for this condition. They use a subtotal gastrectomy. (Hypersecretion of neurogenic origin is not present and gastrectomy gets the growth out which is especially important in case an early malignancy is present). There seems little reason to do a concomitant vagotomy unless the patient has an extremely high free acid. These cases frequently have a normal or subnormal acidity. Our case No. 2 was like that, having an absence of free acid and a low total acidity with a gastric ulcer.

What Various Authorities Think About the Combined Operation for Duodenal Ulcer

In Colp's series of 190 cases[4] which were followed from 2 to 24 months 102 were treated by gastrectomy alone. Of these 87% were classified as well, 10%

improved, and only 3% as failures. In 88 cases in which both gastrectomy and vagotomy were done 91% were well, 9% improved and none classified as unimproved. Colp believes that the combined procedure is especially indicated in those patients with an excessively high preoperative acidity, and in those who have hemorrhage, without pain. Both of these types are apt to have subsequent jejunal ulceration. Hinton found 15 cases of dumping syndrome in 62 cases or 24% when the complementary vagotomy was done. He therefore discontinued the vagotomy as a routine procedure. He feels vagotomy has a place only in superficial ulcers, usually seen in young individuals with massive recurring hemorrhage and an extremely high free hydrochloric acid (such as 60 to 80 units on a fasting stomach), complete absence of pain and x-ray evidence of a superficial ulcer.

At the Henry Ford Hospital Fallis and Barron[7] report that since early in 1946 they have performed subtotal gastrectomy plus vagotomy in practically all patients with duodenal ulcer. In none of these patients has a marginal ulcer appeared and they have had no dumping syndrome. They use the von Haberer-Finney modification of the Billroth I operation.

Walters, Belding and Lillie report in Archives of Surgery[5] that in 353 cases of vagotomy combined with gastric resection for duodenal ulcer, the results were excellent in 85.9%, satisfactory in 11.3% and poor in 2.8%. These are statistics collected by the Vagotomy Committee of the American Gastroenterological Association. Walters states that for selected persons of the high tension type with large amounts of free HCl vagotomy may be combined with gastric resection. Lahey states that an indication for the combined procedure of vagotomy and subtotal gastrectomy is the history of repeated duodenal ulcer hemorrhage. He cites the increased incidence of hemorrhage following gastric resection in these cases.

CONCLUSION

We believe that the findings in this relatively short term follow-up on an admittedly small series of cases tends to show that the rationale of the combined attack on cephalic and gastric phases of gastric secretion is justified when used on duodenal ulcer cases that have an extremely high acid figure, and that it should be continued on an investigative basis. Other than in the presence of this indication we feel at the present time and in the present scope of our knowledge, it is best to hold the vagotomy in reserve should a recurrent (marginal) ulcer develop. It must be emphasized that the combined procedure of vagotomy plus gastrectomy for intractable duodenal ulcer is in an early stage of evaluation. It is hoped that this report added to those already in the literature like that of Colp, Hinton, Fallis & Barron, Kleitsch, Hatch to mention a few, will further stimulate reports on this combined procedure so that in a few years with an adequate follow-up it may be properly evaluated.

* * *

Since this paper was prepared, there have been 10 additional cases done without fatality or morbidity and with the same general good results.

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100 Hopkins Street.

British Films Added to AMA Library.

Two British films—"Some Aspects of Cancer-Skin" and "Some Aspects of Cancer-Rectum"—will be available about October 1 from the AMA's Committee on Medical Motion Pictures. The films are suitable for professional meetings only.

Rural Health Radio Series Available.

An eight-week radio transcription series on rural health entitled "Help Yourself to Health" will be released October 15 by the AMA's Bureau of Health Education to state and county medical societies. The series consists largely of true stories about small American communities which have successfully solved their health problems through local initiative and effort. Citizens from these communities tell the stories in their own words.

Verbatim comments used in the transcriptions were tape-recorded at the National Conference on Rural Health held in Denver. The series was produced by the Rocky Mountain Radio Council. Each program runs 15 minutes.

Covered in the series are such vital topics as "How Small Towns Can Get a Doctor," "How Small Towns Can Keep a Doctor," "Training Rural Doctors," "Working Together for Health" (health councils) and "Projects for Your Health Council." The theme that "self-help is the American way" runs throughout the programs.

XUM

DELAYED POSTOPERATIVE TONSIL HEMORRHAGE: CONCLUSION OF RECENT STUDIES*

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In April, 1948, I presented a paper on "Postoperative Tonsil Bleeding", before the American Laryngological, Otological and Rhinological Society at Atlantic City[1]. At this time a study of 3260 cases of tonsillectomy, with or without adenoidectomy, was reported. The incidence of delayed postoperative bleeding was reduced from 5.2% for the five year period from 1939 to 1943 inclusive, to 1.95% for the period from 1944 to 1947 inclusive. At this time we attributed this decrease in incidence of hemorrhage to limiting the intake of aspirin and the use of vitamin K for one or two days before operation and continuing it through the convalescence period for 10 days. In conjunction with this, we provided typed preoperative and postoperative instructions to each patient. Also, we felt that we had definitely reduced trauma by a few simple changes in technique, such as more frequent use of the Beck Schenk instrument and the practice of removing the adenoids before surgery on the tonsil itself.

Since the original report we have not found it necessary to change our procedure. We have added 1474 cases of T & A operations done in the four year period 1948 to 1951 inclusive. This provides a series of 4734 tonsil operations for the study of delayed postoperative bleeding.

The following chart shows the completed study by years from 1939 to 1951 inclusive:

INCIDENCE OF DELAYED HEMORRHAGES ENCOUNTERED AFTER TONSILLAR OPERATIONS IN THE YEARS 1939-1947

Without Synkavite Medication			*With Synkavite Medication*		
Year	No. of T & A	No. of Late Hemorrhages	Year	No. of T & A	No. of Late Hemorrhages
1939	284	13	1944	385	8
			(no change of technique to this point)		
1940	256	11	1945	483	19
1941	226	16	1946	518	6
1942	303	19	1947	451	3
1943	354	16	1948	367	8
	—	—	1949	397	8
Total	1,423	75	1950	396	4
			1951	314	6
				—	—
			Total	3,311	62
Incidence of delayed hemorrhage 5.2%			Incidence of delayed hemorrhage 1.87%		

Neivert, Pirk & Engleberg[2] presented studies emphasizing the dangers of aspirin causing hypoprothrombinemia and decreased their number of cases with late bleeding by limiting its intake and counteracting its effect with vitamin K.

Fishman and Lebo[3] reported 341 cases of tonsillectomy followed by only 0.5% postoperative hemorrhage. Their cases used aspirin freely without medication to prevent bleeding. They concluded that the use of the Beck Schenk snare had reduced operative trauma and resulted in the fewer hemorrhages.

McGovern[4] attributed his low incidences of bleeding in 150 cases of tonsillectomy to the use of chewing gum containing sulfathiazole.

Fox[5] carefully studied a series of cases and concluded that Aspergum, possibly from its direct local action on the tonsil fossa, was the cause of hemorrhage. He attributes his lowered hemorrhage incidence to his insistence that his patient not use Aspergum.

My interest in Dr. Fox's observations prompted me to send questionnaires to 17 cases of delayed post-

*Read before the Triological Society at its recent meeting in Atlanta.

operative tonsil hemorrhage occurring in the 3 years 1949 to 1951 inclusive. Fifteen replies were returned. Ten cases had delayed bleeding without the use of any Aspergum, while five had used Aspergum. While the number of cases is small, it nevertheless clearly indicated that Aspergum was not the cause of delayed bleeding in the cases studied by me.

One cannot deny that these various observers have truly reduced the incidence of delayed hemorrhage in their tonsil surgery. The fact that each of them approached this subject from different angles and attributed different measures as the cause of reduction of bleeding in their cases, leads one to doubt if anyone of these measures is the single and sole cause of delayed post tonsillectomy bleeding. Rather, one would suspect that some measure or measures practiced by each of them might have lowered the incidence.

In all these studies I am sure that in the mind of the surgeon, the great emphasis placed on the problem of tonsil bleeding has prompted, consciously or otherwise, his closer attention to certain general measures pertaining to the better care of his patient. Some of these might be listed below as follows:

I. More care in the preparation of the patient, such as a longer convalescent period following acute upper respiratory infections. It would seem unwise to operate upon patients earlier than three or four weeks after an acute nose and throat infection. Especially liable to bleed are patients who have had acute rheumatic fever and whose sedimentation rate has not returned to normal. During epidemics of measles or other acute infectious disease, postoperative hemorrhage is more frequently encountered.

Some method of assuring prompt and efficient clotting of the blood is desirable before operation and throughout convalescence.

II. The more generous use of antibiotics, before and after operation, thereby reducing infections. Penicillin given while the patient is asleep will avoid the pain and, in case of children, the fright of hypodermics.

III. Improved technique at the time of operation, thus minimizing trauma and complete hemastasis while on the table. Meticulous care to avoid tearing of the pillars, the trauma of too strong suction, and the leaving of tags of tissue are measures of importance.

IV. Written detailed instructions for postoperative care, thus impressing on those responsible, the possibility of hemorrhage and the necessity to restrict the patient's actions, decrease the dehydration and starvation, and limit such drugs known to prolong the prothrombin time.

It would seem to me than that if one has a high incidence of delayed postoperative tonsillar hemorrhage, one should use such specific means as he might find useful in his cases. Emphasis, however, should be placed on the closer attention to the general care of the patient, preoperatively, on the table, and postoperatively.

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AMENORRHEA—ORAL ESTROGEN—PROGESTERONE TREATMENT

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Dual ovarian steroid therapy in the form of orally administered hormones has been employed in the treatment of amenorrhea. Orally active ethinyl estradiol and anhydrohydroxyprogesterone in a dose relationship of 1:1000 combined in a single tablet was the therapy employed. The tablets were given daily for a period of five days and cycles of treatment were repeated periodically over several months in an attempt to establish cyclic menstruation. Therapy was started twenty days from the first day of each induced bleeding episode, thus establishing bleeding cycles of approximately twenty-eight days.

OVARIAN-STEROID WITHDRAWAL BLEEDING

Menstruation occurs physiologically as the result of corpus luteum involution with a consequent withdrawal of estrogen and progesterone. The characteristic endometrial changes induced by the ovarian steroids were first reported by Kaufman[1]. It was Zondek[2] who developed a planned schedule of therapy for the treatment of amenorrhea. He recommended the administration of estrogen for a period of twenty-five days to be followed by progesterone administered over a period of five days. The menstrual irregularities[3,6] dysmenorrhea[7,12], sterility[13], and habitual abortion[14,17], have all been treated by this cyclic administration of these hormones with varying degrees of success. It was Greenblatt who first observed that the parenteral administration of estrogen and progesterone over a five-day period was followed by endometrial desquamation; he called it "medical curettage"[3].

To simulate normal function those agents used to induce the phenomena should resemble, chemically and pharmacologically, the endogenously produced hormones. Uterine bleeding may be induced in amenorrheic women by either estrogen[18,20] or progesterone[21,25]. Administration of both estrogen and progesterone is followed upon withdrawal by desquamation of endometrium and a phase of uterine bleeding having many characteristics in common with normal menstruation. Although bleeding occurs following the withdrawal of estrogen alone the endometrial shedding following estrogen-progesterone withdrawal seems to stimulate the anterior lobe of the pituitary to take up its production of gonadotropic hormones for the maturation of the follicle in the succeeding cycle and thus seems to reorient pituitary-ovarian physiology[26,27]. The endometrial pattern following administration of estrogen and progesterone during the latter part of the cycle approximates that seen preceding normal menstruations.

ORAL STEROID THERAPY IN FUNCTIONAL AMENORRHEA

Cyclic steroid therapy has been widely used in the treatment of menstrual irregularities since Zondek developed a planned schedule of treatment[21]. He recommended the administration of estrogen over a period of twenty-five days to be followed by progesterone over a period of five days. His treatment schedule as well as all others heretofore recommended has depended upon the parenteral route of administration of one or the other of the hormones. In view of the relative simplicity, convenience, and economy of oral medication, a clinical study of an orally effective estrogen-progesterone combination was undertaken.*

Fifteen patients with amenorrhea (nine primary, six secondary) were treated with 0.01 mg. of ethinyl estradiol and 10.0 mg. of anhydrohydroxy-progesterone combined in a single tablet. The ages of these patients varied from nineteen to thirty-six years. The intervals since their last menstruation ranged from five weeks to eighteen months.

Endometrial biopsies were obtained in fourteen of these patients before treatment was instituted. A proliferative phase endometrium was found in seven, a secretory phase endometrium in six, and a transitional phase in one patient. Those patients in whom a progestational endometrium was found were in every case patients with short periods of amenorrhea. These patients require no treatment. Their defect is one of either delayed ovulation or prolonged corpus luteum survival. The induction of bleeding in anovulatory patients demonstrated that

*Duosterone tablets, supplied through the courtesy of the Roussel Corporation, 155 E. 45th St., New York.

simultaneous oral administration of the two steroids in adequate dose was consistently effective in the induction of withdrawal bleeding.

The next step was an effort to determine the minimum effective intake of hormones. In a group of ten patients the dose was five tablets daily for five days. Four patients showed evidence of bleeding following the first treatment cycle. In one patient uterine bleeding occurred while under treatment, hence the bleeding was regarded as not having been induced by the medication and that patient was eliminated from the study.

In those cases where no bleeding occurred after the first treatment cycle, administration of five tablets daily for five days was begun on the tenth or twelfth day following the first day of the last treatment. Where bleeding was induced, treatment for the second cycle was started on the twenty-first, twenty-second, or twenty-fifth day following the first day of the last treatment.

As a result of the second treatment cycle uterine bleeding occurred in seven of nine patients (77.7%). Following the third successive treatment cycle uterine bleeding was induced in all patients.

OVARIAN STEROID THERAPY IN MENOPAUSAL AMENORRHEA

Fourteen patients suffering from menopausal symptoms were treated with this steroid combination. All of these patients had an amenorrhea of three months or longer. In a dose of three tablets daily for a period of eighteen to thirty-one days the medication proved highly efficacious for the relief of vasomotor symptoms of the climacteric. It imparted a sense of well being to the patients over and above that generally experienced after administration of estrogens alone. The great objection to this combined steroid treatment in the menopause is the high incidence of withdrawal bleeding. However, in a dose of one tablet daily symptoms may be moderated and bleeding avoided.

SUMMARY

In summary, it was learned that tablets containing anhydrohydroxyprogesterone 10.0 mg. and ethinyl estradiol 0.01 mg. in an oral dose of five tablets daily administered to patients with secondary amenorrhea for five days induced a scanty bleeding phase in 44.0% of the patients in the first treatment cycle. Withdrawal bleeding was increased to 77.7% following the second course of treatment and all showed a bleeding response at the conclusion of the third course. A somewhat improved bleeding response was obtained when the daily dose was doubled.

Repeat treatment with a dose of five tablets daily for five days in three consecutive cycles induced a secretory phase of the endometrium in about 50% of the patients.

It was found necessary to administer approximately ten tablets daily for five days in order to induce a full secretory phase endometrium.

CONCLUSIONS

1. Tablets containing a mixture of orally effective anhydrohydroxyprogesterone and ethinyl estradiol were evaluated in the cyclic treatment of amenorrhea.
2. The combination of anhydrohydroxyprogesterone (10.0 mg.) and ethinyl estradiol (0.01 mg.) is a satisfactory combination for the treatment of functional amenorrhea when administered in adequate dose over three consecutive cycles.
3. Treatment with this combination seems to be somewhat more than pure substitutional therapy in that it appears to establish a normal pituitary-ovarian rhythm in some patients.

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Medical Arts Building

PR Conference in Denver.

The AMA's fifth annual National Medical Public Relations Conference will be held Monday, December 1—the day before the opening of the Clinical Session—at the Shirley-Savoy Hotel, Denver. Theme of the one-day meeting will be "Mutual Understanding . . . the Key to Better PR." The Conference program will be geared primarily for physicians. Members of the House of Delegates, officers of state and county medical societies, officers of the Association and executive secretaries and PR personnel are cordially invited.

New Radio Series on Sports and Health.

A new series of radio transcriptions dealing with sports and health subjects will be available about December 15 from the AMA's Bureau of Health Education for use by local radio stations. The programs are based upon on-the-scene interviews with Olympic winners in Helsinki, Finland, and with national champions and other outstanding sports figures in this country.

Topics cover personal aspects, athletic accomplishments, team practice and health values of sports.

Industrial Firms Purchase "Today's Health" for Employees.

Large bulk orders of "Today's Health" magazine from several American industrial firms have been reported by the "Today's Health" Circulation Department as a result of continued promotion to industrial physicians. The Timken Roller Bearing Company of Canton, Ohio, for example, currently provides copies of "Today's Health" for the more than 1,300 supervisory personnel throughout its organization. The Chesapeake and Potomac Telephone Companies of Washington, D. C., have purchased about 250 subscriptions for chief operators in the Virginia, Maryland, West Virginia and District of Columbia area.

This year, the Pepsi-Cola Company is supplying "Today's Health" to a dozen of its locally-owned branch offices on a trial basis. If successful, the company will encourage all of its branch offices to subscribe for employees. Many firms are ordering from six to twelve copies for employee reading rooms.

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NON-SPECIFIC INFLAMMATORY TUMORS OF THE COLON— FOUR CASES FROM THE SIGMOID

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Tumor-like inflammatory lesions of the gastrointestinal tract have been appreciated since the days of Virchow. An awakening of interest in these lesions began when Lord Moynihan[5] in 1907 published a paper entitled, "Mimicry of Malignant Disease in the Large Intestine". In this paper, he stated that "The inflammatory tumors of the large intestine, excluding the tuberculous conditions, are, it would appear, far more frequent than we have supposed". In 1938 Dudley and Miscall[2] reviewed the history of inflammatory tumors of the intestine. They pointed out that in 1909 Heinrich Braun was the first investigator to describe in detail the gross and microscopic pathology of these lesions and to separate them from the specific granulomata. Since then, non-specific inflammatory lesions of various sorts have been reported occurring everywhere in the gastrointestinal tract from the esophagus to the anus. It was not until 1923 when Moschowitz and Wilensky[4] reported four cases in an article entitled "Non-Specific Granulomata of the Intestines", that the surgeons in this country began to show more than casual interest in this subject.

Etiology:

The etiology of non-specific inflammatory tumors is unknown. Erdman and Burt[3] express the opinion of most writers when they say, "It is our feeling that there is first an interruption in the continuity of the mucosa as a reaction to the presence of an infectious or toxic agent or an indefinite foreign body, resulting in ulceration of the mucosa. With the destruction of the mucosa, active infection follows and extends into the wall of the intestine, setting up a low grade inflammatory process which manifests itself in the cellular infiltration and connective tissue formation, which constitute these granulomata". Other factors which may play a part in the formation of these lesions are chronic ulcers, foreign bodies, allergy, trauma, corrosive enemata, and extension into the bowel wall of extra-intestinal inflammatory processes such as pelvic infections in the female. Conceivably, partial or temporary occlusion of the blood supply of a segment of bowel involved in a volvulus, intussusception, or strangulated hernia could initate the changes leading to granuloma formation.

Possibly an over-simple explanation for the predilection of granulomata for the terminal ileum and the sigmoid colon can be found in the anatomical fact that in these two locations the lumen of the bowel is more narrow than anywhere else in the lower gastrointestinal tract. It seems logical to assume that since the mucosa is theoretically subjected to more wear and tear in these two places, breaks in the mucosa occur more frequently here than anywhere else, thus setting the stage for granuloma formation.

Sigmoid diverticulitis is the commonest cause of inflammatory tumors of the colon, and, although the inflammatory process is of a non-specific nature, it is more properly considered a definite entity with a demonstrable cause. It is not under consideration here.

Pathology:

Non-specific granulomata of the colon are related to the more common clinical entities, regional ileitis and ulcerative colitis. In 1932, Crohn, Ginzburg, and Oppenheimer[1] first described regional ileitis. They said, "The so-called benign granulomas all present a tumor-like inflammatory mass which usually simulates carcinoma which eventually unmasks itself as probably an infectious process of unknown causation. The multiplicity of the possible sites of gastric, intestinal, or colonic involvement and the accompanying protean clinical manifestations defeat any effort to include them all in a clear cut clinical entity. The very confusion defies classification". They then continue, "Just as the generic term of typhus originally included various diseases, from which group eventually typhoid fever, Brill's disease, Rocky Mountain fever, tabardillo and others were split off, so, similarily, do we aim to disintegrate from the general group of varied diseases spoken of as 'benign granuloma' a specfic clinical entity with constant and well defined characteristics, which we propose to name 'regional ileitis'." In

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1948 Warren and Sommers[7] reviewed one hundred and twenty cases of regional ileitis which they termed "cicatrizing enteritis". They, too, concluded that several rather constant histological findings make it an acceptable pathologic as well as a clinical entity. Dudley and Miscall[2] believe that the terms inflammatory tumor, infective granuloma, non-specific granuloma, chronic cicatrizing enteritis, regional ileitis, terminal ileitis and others are all synonymous. Perhaps the disease ulcerative colitis should be included with these terms since its etiology is also unknown, and pathologically there is overlapping of the "characteristic" findings in ulcerative colitis, non-specific granuloma of the colon, and the others above. One occasionally sees in the colon a discrete inflammatory tumor of an idiopathic nature which is accompanied by findings of mild generalized colitis. Conversely, the picture of full blown ulcerative colitis is occasionally seen in an isolated segment of an otherwise normal colon. In short, there is no convincing evidence that all of these conditions are not simply different manifestations of a common pathogenesis. Clinically, however, the discrete, non-specific, benign granulomas should be considered separately.

In most non-specific granulomata of the colon, grossly the bowel presents an edematous thickening of variable density, often with rather discrete borders, and appearing to involve all of the layers of the bowel wall. The mesentery and pericolic fat are thickened and indurated. Enlarged regional lymph nodes are a constant finding. Fresh adhesions to surrounding structures are common and sometimes small abscesses are encountered. The mucosa may present small, irregular, ragged, superficial ulcerations. Pseudopolyps may be present. As often as not, the mucosa is intact.

Microscopically the lesions show varying degrees and stages of acute and chronic inflammation with infiltration by lymphocytes, plasma cells, polys, mast cells, eosinophiles, and macrophages. Giant cells of the foreign body type are commonly seen. A varying fibroplastic reaction is always present. New blood vessel formation is sometimes a prominent finding. Submucosal edema which contributes to the narrowing of the bowel lumen is usually present. Dilated lymphatics and hyperplasia of the regional lymph nodes are generally seen.

The lesion must be distinguished from neoplasms and the specific granulomata. Syphilis, actinomycosis, lymphogranuloma, amebic disease, histoplasmosis, and tuberculosis may be difficult to exclude. So-called hyperplastic tuberculosis of the colon is a diagnosis that should not be used unless the tubercle bacillus can be demonstrated in the excised tissue. Prior to the work of Crohn, Ginzburg, and Oppenheimer most of the non-specific inflammatory bowel tumors were diagnosed as hyperplastic tuberculosis. In the non-specific granulomata caseous necrosis is not seen, the granulomata are microscopically not as distinct, and the giant cells are not of the typical Langhans type.

Symptoms:

The clinical manifestations of inflammatory tumors of the colon depend on the stage and severity of the disease. In the acute phase, the picture can be that of any acute intra-abdominal inflammatory condition with pain, fever, nausea and vomiting, diarrhea, leucocytosis, etc. In chronic stages the picture is predominantly that of any other obstructing lesion with constipation sometimes alternating with diarrhea, cramps, etc. Abscess and fistula formation are occasional late complications.

Diagnosis:

In the acute stage it is extremely difficult to tell this condition from some of the more common acute intra-abdominal conditions, most of which require laparotomy. However, most cases of non-specific inflammatory tumors progress to the chronic stage without having gone through very dramatic acute or subacute episodes.

In the more common chronic stage, routine history, physical examination and routine laboratory work plus a digital examination of the rectum, sigmoidoscopic examination and roentgenology after barium enema will usually lead one to suspect and then to localize a lesion. On abdominal examination a palpable mass is often present. After the lesion has been localized, if biopsy proves that it is not a neoplasm, then an inflammatory tumor should be suspected. Any lesion which cannot be biopsied must be considered a malignancy until proven otherwise. To be thorough, one should perform a Frei test or complement fixation test for lymphogranuloma. The stools should be examined for amebae, fungi, and tubercle bacilli. In the great majority of cases an inflammatory tumor

is not suspected and the patient is assumed to have a neoplastic lesion, or his or her mass is often thought to be non-intestinal in origin. The inflammatory tumors associated with diverticulitis can often correctly be excluded, since so many of these patients have previously been known to have had diverticulosis, and diverticulitis.

F. G. Ralphs[6] aptly summarized the situation when he stated, "A differential diagnosis from malignant disease or the specific inflammations causing intestinal 'tumor' is hardly possible before exploration, and actually is rarely made at operation. Usually histological examination of the resected mass furnishes the first clear evidence of its nature".

Treatment:

If the acute stage of an inflammatory tumor of the colon is recognized without operation the treatment is medical. Where an acute segmental lesion is encountered at operation the treatment of choice is to do nothing or at most a colostomy proximal to the pathologic bowel. Ralphs[6] refers to cases discovered at operation where no definite surgical treatment was performed and where the masses subsequently disappeared. As stated earlier, most of these patients are first seen after the disease has progressed to a chronic stage where intestinal obstruction is more or less complete. The best treatment here is resection if the presence of abscesses or other complications does not contraindicate it. A colostomy proximal to the diseased segment of bowel may be the initial procedure of choice when complications are present, and also it may prove curative. A modified Mikulicz resection is the safest type of resection when the disease process is not sharply demarcated or when the mesentery is badly involved.

The following four cases were handled by Dr. R. C. Siersema, Dr. William R. Hill, and myself, and are briefly presented as cases of non-specific inflammatory tumors of the sigmoid.

Case I: Mrs. W.K. was a 27 year old multipara who was admitted to Grace Hospital on 2/11/48 with a chief complaint of "vaginal bleeding and pain in the stomach" of three weeks duration. This episode had begun two weeks after the cessation of her previous menstrual period. The pain had been of a cramping nature, was located in the left lower quadrant, and had begun two days before the onset of bleeding. Her bowel habits were not unusual.

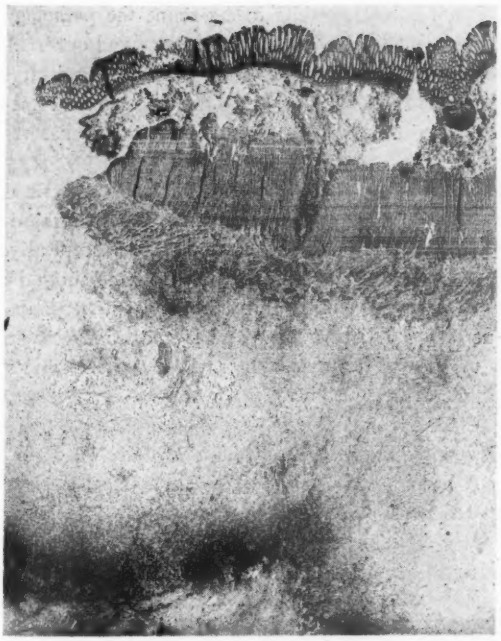

Fig. I—From case I. Demonstrates a chronic granuloma involving the serosal side of the bowel.

Her past history revealed that in 1940 she had undergone left oophorectomy, resection of a cyst from the right ovary, and appendectomy. On 9/2/47 she had a D&C, "cautery puncture" of a recurrent cyst of the right ovary, and a cholecystectomy. She was well up until the onset of the present illness.

Physical examination on admission revealed her temperature to be 99.5, pulse 120, and respiration 22. She was a moderately obese young woman in no acute distress. There was tenderness over the lower abdomen, more marked in the LLQ. Pelvic exam revealed a tender fixed mass in the left side of the pelvis. A moderately severe secondary anemia and mild leucocytosis were present. Serology was negative for syphilis.

A presumptive diagnosis of ectopic pregnancy was made on 2/12/48. A D&C was performed and the abdomen explored through a left rectus incision. A hard well circumscribed mass was encountered in the mid-sigmoid. This was firmly attached to the lateral pelvic wall and was dissected free with difficulty. No diverticula were demonstrated. A biopsy was taken from an adjacent mesenteric mass but frozen section diagnosis was inconclusive. The operative note states, "after dissecting up the sigmoid

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colon it was impossible to determine the pathology present but malignancy could not be ruled out". A modified Mikulicz resection was performed and after the second stage closure of the double-barreled colostomy, she made an uneventful recovery and has remained well.

Dr. J. H. Scherer's pathology report described "A four inch length of intestine with a firm, hard, yellowish mass under the mucosa". Microscopically, "A number of sections from the intestine show the mucosa intact. There is a chronic granulation tissue over the serosal layer and in the submucosa in a number of sections, with a mixed cell infiltration in these areas. There is no suggestion of tumor and the appearance is like that seen in the stomach frequently where there has been an older ulcer".

A barium enema examination on 8/5/48 showed that the colon filled readily throughout. There was a marked redundancy of the left side of the colon but no organic pathology could be demonstrated.

Fig. II—From case II. Shows a submucosal area of organizing edema and early granuloma formation.

Case II: Mrs. L.M. was a fifty-three year old multipara who was admitted to Grace Hospital on 4/7/49. Her chief complaint was "dull aching pain along the left side of the abdomen". This had been present for one and one-half years and for the past two months she had been progessively more constipated, having bowel movements only after taking laxatives. There was no blood or mucus in the stools. Her past history revealed that thirty-two years before she had had a suspension and appendectomy. In 1936 she was given a small dose of intrauterine radium for menopausal menorrhagia. In 1947 her gallbladder was removed. On 8/26/48 a diagnostic D&C was performed because of vaginal bleeding. This diagnosis was hyperplasia of the endomentrium and another short course of radium was given.

Physical examination on admission revealed a slightly obese middle-aged woman in moderate discomfort. Her TPR were normal. The abdomen was tender all over, more marked in the LLQ. Pressure on the abdomen caused such pain that deep palpation was impossible. Pelvic exam was negative. Laboratory work was not remarkable. Serology was negative. On barium enema on 4/11/49 the colon filled readily throughout. In the sigmoid about twelve inches above the anus there was a deformity. Its appearance was not characteristic of carcinoma, but was suspicious. This examination was repeated several days later and there was still a constant deformity present.

On 4/19/49 under general anesthesia she was explored through a left rectus incision. At operation a three inch inflammatory mass was encountered in the sigmoid. No diverticula were present. The mass was resected along with about eight inches of bowel and an end-to-end anastamosis was performed. This patient had a very stormy postoperative course and developed a fecal fistula which closed slowly following a cecostomy on 5/27/49.

Dr. Scherer reported a twelve cm. length of intestine showing a firm indurated bowel about a punched out one and one-half cm. ulcer. Microscopically, "Several sections from the sigmoid show a punched out ulcer with a necrotic base and a thickened and edematous wall in which there is a mixed cell infiltration including a number of plasma cells and eosinophils".

She has been in reasonably good health since leaving the hospital. On 3/20/50 a barium enema was negative, although in the sigmoid there was an area of about one inch over which the lumen of the bowel

was somewhat constructed. She has continued to have vague pains in the left lower quadrant of the abdomen.

Fig. III—From case III. Is included to show a typical barium enema in a badly obstructing granuloma. The pyelogram of this case is presented to show the proximity of the pelvic kidney to the level of obstruction in the bowel.

Case III: Mr. R.D. was a sixty-two year old man who was admitted to Grace Hospital on 8/14/49 for investigation of genito-urinary symptoms and pain in the perineum and lower abdomen. He was seen by us at the request of Dr. T. B. Washington after Dr. Washington had completed a G-U workup including cystography and pyelograms which revealed nothing out of the ordinary except a pelvic kidney on the left side. His history revealed that in addition to G-U symptoms, he had also been having a mucoid type diarrhea for about three weeks. His temperature was 100.4 and leucocytosis was present.

Lab. work was otherwise negative. Serology was negative. Rectal examination revealed a firm tender mass just above the prostate and seemingly outside the lumen of the bowel. Sigmoidoscopic exam. on 8/19/49 revealed no lesion although the scope met an impassable obstruction at the eight inch bowel. Barium enema on the same day was unusual in that it was possible to fill the bowel only as far as the recto-sigmoid where the barium in the colon appeared to have a very ragged outline suggesting the possibility of a severe spasm or a fungating growth. His past history revealed that on two occasions about ten years ago he had had prostatic stones removed cystoscopically.

Various diagnoses were entertained, including carcinoma of the sigmoid, kidney tumor, prostatic abscess, and diverticulitis with abscess formation. On 8/20/49 under spinal anesthesia he was explored through a left paramedian incision. An inflammatory mass was discovered in the sigmoid several inches above the pelvic peritoneal diaphragm. Beneath this mass there was a small abscess. The mass was resected including ten cm. of bowel and an end-to-end anastomosis was performed. An appendicostomy was made and a small cigarette drain was brought out through a left inguinal stab wound from the area of the abscess. His postoperative course was uneventful and he was discharged in two weeks.

Pathologically, the bowel showed a ten cm. length of sigmoid with a central greatly thickened area. The mucosa was intact. Microscopically, there was granulation tissue in the submucosa and over the serosal coat. No tumor was seen.

He has remained in good health.

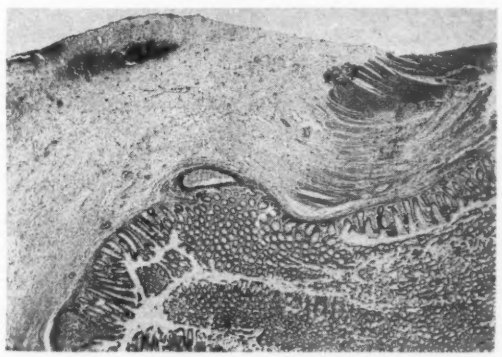

Fig. IV—From case IV. Illustrates a submucosal granuloma at a point where it meets and infiltrates adjoining submucosa and muscularis.

Case IV: Mrs. H.H. was a sixty-eight year old nulliparous woman who was admitted to Grace Hospital on 4/1/49. For months she had been complaining of severe constipation and for a long time she had been living on a liquid diet. For three weeks prior to admission she had been having sharp cramping pains in the left side of the abdomen. She had no diarrhea, or blood or mucus in the stools. Her past history revealed that nine years previously she had had a supravaginal hysterectomy, right salpingo-oophorectomy, and appendectomy for fibroids of the uterus.

On admission her temperature was 100.4. She was emaciated, pale and extremely apprehensive. An anemia and a mild leucocytosis were present. Serology was negative. On abdominal examination there was considerable tenderness and an easily palpable mass in the LLQ. Pelvic and proctoscopic

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exam. were unsatisfactory and she was unable to retain the barium when a barium enema was attempted.

The most likely diagnosis was carcinoma of the colon. An ovarian neoplasm was also considered. On 4/4/49 she was explored under spinal anesthesia. A bound-down, lemon-sized, mass was discovered in the mid-sigmoid. This was resected by a modified Mikulicz technique. She made an uneventful recovery after the colostomy was closed.

Microscopically the bowel showed a marked chronic inflammatory process, chiefly involving the serosa but to some extent the submucosa of the colon. This was characterized by chronic granulation tissue, greatly thickening the wall of the bowel.

When last seen she had no complaints referable to the colon.

SUMMARY

Four cases of granulomata of the sigmoid colon have been presented. Although no cultures were made, these cases are presumed to represent nonspecific inflammatory lesions because of their localized nature and because histologically they do not suggest any of the conditions having a specific etiology. They were not a result of diverticulitis, the commonest localized inflammatory condition of the sigmoid, since no diverticuli were demonstrable at operation or by the pathologist. It is possible that these cases are a localized variant of idiopathic ulcerative colitis although a mucosal ulcer was discernible in only one case. The fact that all four of these patients had had, either recently or remotely, surgical procedures in the pelvic region suggests the possibility that in some way the surgery, or the conditions for which surgery was performed, may have been connected with the development of the lesions described. In Case II, the bowel granoloma was possibly a result of the two previous courses of intrauterine radium. As in most of the cases of this condition reported in the literature, the final diagnosis in our cases was made either at operation or by the pathologist.

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HEMOPHILIA WITH TWO CIRCULATING ANTICOAGULANTS— Clinical and Experimental Study*

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The introduction to most recent papers dealing with hemophilia is quite characteristic—the authors mention the recent advances in understanding the cause of hemophilia. The situation is really encouraging because the problem of hemophilia is becoming more interesting with each development in clotting theory, with each new variation of known tests and with each newly developed test.

We realize that the basic defect in hemophilia—the lack of antihemophilic globulin—is not *per se* a sufficient explanation of bleeding episodes during the life of a hemophiliac. There must be some periodic fluctuation of other agents responsible for the fact that an identical trauma will cause bleeding in a hemophiliac during one period of time and will be without detrimental effects at another time.

We believe that these unknown agents are of utmost importance because by preventing them or by their neutralization, we may keep hemophiliacs from bleeding regardless of their basic deficiency in antihemophilic globulin. The detrimental effects of these agents are probably due to anticoagulant properties. One of these potential anticoagulants may be of an antibody nature, as has been shown in some cases. Others may be connected with the presence of one or more anticoagulants, as occurred in our case. There are eight cases reported in the literature[2,5,9] in which hemophiliacs were shown to have a circulating anticoagulant. In some of these cases studied very thoroughly by the investigators, the circulating anticoagulant was shown to be an antibody against antihemophilic globulin. It was separated electro-phoretically in one of the globulin fractions and its physico-chemical properties were studied[7,8].

We present a case of an 11 year old Negro boy with a so-called sporadic hemophilia without family history. During the investigation we found two different types of anticoagulant present in his plasma. One—the heparin-like type which reacted favorably to a single course of therapy with protamine sulfate, and the other—an antibody against antihemophilic globulin demonstrated after neutralization of the first anticoagulant. The anticoagulant of the antibody type was demonstrated *in vitro* and its ability to neutralize the antigen (in this case the antihemophilic globulin) was shown repeatedly to be constant during the time of observation. We consider this case worthy of reporting since it shows that after making an unequivocal diagnosis of hemophilia, one may find an additional disturbance of blood clotting mechanism which may contribute to a bleeding episode in the patient.

The patient was first admitted to this hospital on the Orthopedic Service on August 19, 1949, with the complaint of a painful right thigh and knee joint following a fall while playing. His past history revealed a bleeding tendency present since infancy. He was hospitalized at the age of 7 years because of nose bleeds and a swollen painful right knee joint. At this time he received his first transfusion of whole blood. Since that time he had recurring bouts of epistaxis and joint and muscle swellings following mild trauma. A rather detailed family history revealed no bleeding tendency in any brothers, maternal uncles or maternal great uncles. His maternal grandmother died of tuberculosis.

The positive physical findings were that of a thin pale colored male with a swollen warm indurated area approximately 9 c.m. in diameter in the anterior lateral right thigh muscles and a swollen tender right knee joint with a flexion contracture of 160 degrees. X-rays of the knee joint revealed a slight narrowing of the joint space and chest film showed a healed Ghon complex in the right lung. The O.T. skin

*This study was supported in part by U. S. Public Health Service Grant HG-924.

Read at the annual meeting of The Medical Society of Virginia at Virginia Beach, October 7-10, 1951.

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test was strongly positive, 1:1000. The sickle cell preparation showed no sickling at 24 hours. Capillary fragility test was attempted but could not be evaluated because of the dark pigmentation of the patient's skin. The laboratory studies were within normal limits except for the blood studies presented in Table I. The diagnoses were: hemophilia with hematoma of the right thigh, hemarthrosis of the right knee with a contracture ankylosis and secondary anemia. The patient was treated with multiple correction casts for the flexion deformity of the right knee. Two 500 cc. whole blood transfusions were given. He was discharged on October 3, 1949.

Following this episode, the patient was readmitted to our hospital four additional times for further studies and evaluation. On each admission he gave a history of recurring epistaxis, muscle and soft tissue hematomas, and hemarthrosis following mild trauma but no hematuria, hematemesis or melena. On each admission he had a normocytic normochromic anemia with a bleeding tendency which was treated with five 200 cc. whole blood transfusions and 200 cc. of plasma.

Upon the third admission to the hospital, the patient was found to have, along with the usual prolonged clotting time (1 hr. 10 min.), a constantly high heparin level of 12 gamma per cc. There was also a second circulating anticoagulant. Because of the abnormally high heparin level, the patient was given 210 mg. of protamine sulfate intravenously over a five day period in daily doses varying from 30 to 50 mg. By the third day of therapy, the heparin level had dropped to 3.3 gamma per cc. and two days after this therapy had been completed, the heparin level was zero. During the remainder of this hospital stay, no heparin was detected in the patient's blood but the coagulation time remained prolonged. Also, the second circulating anticoagulant could still be demonstrated.

On the subsequent hospitalizations, two and four months later, the heparin level was still zero. During the latter two admissions, the patient received no protamine sulfate, plasma or whole blood. Further studies were done revealing the presence of anti-hemophilic globulin antibodies which will be discussed below. Only fully compatible blood was used in all the studies reported.

During the first two admissions to the hospital the patient was treated with blood transfusions because of anemia and bleeding. At that time his hemoglobin values and number of red cells were low, reticulocytes high, white blood cells high (up to 16,800) and the platelets were within normal limits. After treatment with protamine sulfate, the bleeding stopped and his hemoglobin and red blood cell count rose to normal. Reticulocytes decreased to 1%, white blood cells decreased to normal. Platelets did not show any change. We studied the clumpiness of platelets as suggested by E. O. Hirsch, J. Favre-Gilly and W. Dameshek[3], and noticed no deviations from normal. Fibrinogen levels were determined before treatment with protamine sulfate while the heparin was elevated, and twice after the treatment. The changes in fibrinogen level were not significant. Bleeding time was done by the Duke method and was always within normal limits. It was not changed by blood transfusions or injections of protamine sulfate. Clotting time was prolonged. Unfortunately it was determined on the first admission with the capillary tube method which is known to be inaccurate. All other values were obtained with the Lee-White method. Variations were quite extensive, ranging from 70 up to 250 minutes. These variations could not be correlated with the degree of bleeding or with treatment. Clot retraction was determined in the tubes used for testing the clotting time with Lee-White method. Therefore, it may differ slightly from the standard method, being shorter than the clot retraction determined with a method when the tubes are not tilted. The clot retraction was 2 hours on the second admission and increased up to 24 hours at the time when the heparin level was high and the patient was in a bleeding period. The clotting time remained prolonged. The prothrombin time expressed as per cent of normal concentration was done by the one-stage method of Quick. Considering 50-100% of concentration as normal, we found no abnormality. Prothrombin consumption was determined by Quick's method. The test as described originally, was supposed to always be negative in cases of hemophilia; however, Quick[4] states that some mild cases of hemophilia may exhibit partial consumption of prothrombin. Our case showed no consumption during the period when his heparin level was high. Immediately following treatment with protamine sulfate, the prothrombin consumption increased to 75%. This test was repeated twice. On later admissions his prothrombin con-

sumption was again zero. In another case of hyperheparinemia, we observed a decrease of prothrombin consumption which was restored to normal after removal of the circulating anticoagulant. We consider the possibility that in a case such as the one reported in this paper, prothrombin consumption may be influenced by the presence of another anticoagulant responsible for one of the bleeding episodes.

Heparin level was determined by the method published by LeRoy and Halpern.[1] We used this method in our experimental work and checked the recovery of heparin added to normal blood. We obtained a recovery close to 100% in levels of 5 gamma/cc. and above. Because of the dilutions of protamine sulfate used for neutralization of heparin, this method is in our opinion not sensitive enough to detect heparin levels below 5 gamma/cc.

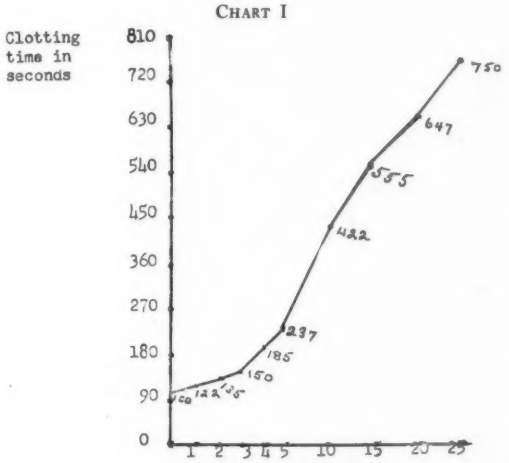
As can be seen from Table I, we obtained consistently high levels of heparin during the third admission of the patient. After treatment with protamine sulfate, the level returned to normal. From our experience with other cases of hyperheparinemia, we observed that the heparin level stays within normal limits for months after it is brought to normal with adequate treatment. Since we do not know the cause of hyperheparinemia, it is impossible to explain this long remission.

Test for circulating anticoagulant was made with estimation of the modification of Quick's method used by Frommeyer and others.[2] It is based on clotting time of recalcified plasma, using a mixture of normal and patient's oxalated plasma in varying proportions. The first figure shown in Chart I is the clotting time of recalcified normal plasma; the other is the recalcification time of patient's plasma. During the period when the patient's plasma contained 10-12 gamma/cc. of heparin, his recalcification time was 480 seconds. When his heparin level dropped to normal after treatment with protamine sulfate, the recalcification time of the plasma was 130 seconds and stayed around 180-192 seconds during subsequent admissions.

Before treatment with protamine sulfate, the patient had two circulating anticoagulants and showed a prolonged recalcification time. By the protamine sulfate therapy, we removed one circulating anticoagulant of the heparin-type and the recalcification time dropped almost to normal. These results indicate that the circulating anticoagulant of the antibody type which was shown to be present has no—or very little—influence on the recalcification time of oxalated plasma. The recalcification time is influenced by the heparin-type anticoagulant only.

In order to evaluate the influence of concentration of heparin on recalcification time of oxalated plasma, known amounts of heparin were added to blood and plasma. The recovery of heparin was almost 100% in these samples and we were able to draw a curve of recalcification time which shows its direct relationship to the heparin concentrations. We used this curve on known and unknown concentrations of heparin. However, as is well known, this direct relationship does not apply to thrombocytopenic blood.

CHART I



Recalcification Time of Heparinized Blood.

After the heparin-like anticoagulant was removed by treatment with protamine sulfate, we tried to determine some characteristics of the antibody type anticoagulant. The following table II shows the

TABLE II

Normal Blood	Hemophiliac plasma	Normal saline	Patient's plasma	Clotting time
1.0	0.5			Not clotted in 24 hrs.
1.0				5½ min.
1.0		0.5	0.5	Not clotted in 24 hrs.
1.0			0.4	Not clotted in 24 hrs.
1.0			0.3	Not clotted in 24 hrs.
1.0			0.2	6 min.
1.0			0.1	6¼ min.
1.0				6¼ min.

TABLE I

Admissions	Date	RBC	Hgb	WBC	Platelet	Retic	Heparin	Bleeding Time
I	8-20-40	2,200,000	7.0 gms.	14,200				
	8-26-49				690,000	1.2%		2 min.
	8-31-49							2½ min.
	9-6-49							2 min.
	9-7-49							1 min.
	9-23-49							
	9-26-49							
II	2-17-50				300,000			4½ min.
	2-21-50	1,490,000	4.8 gms.	16,600				30 sec.
	3-1-50				327,800			3 min.
	4-11-50							5 min.
	4-28-50							
III	10-31-50	3,110,000	8.8 gms.	16,800	404,000		10 gam.	
	11-16-50	2,510,000	7.6 gms.	4,750	406,420		12 gam.	
	11-28-50	3,070,000			423,660		12 gam.	
	11-29-50	3,540,000			371,700		12 gam.	
	11-30-50						12 gam.	
	11-31-50						3.3 gam.	
	12-4-50						0 gam.	
	12-5-50						0 gam.	1 min.
	12-6-7-50						0 gam	
	12-8-50	2,440,000			351,363		1.5 gam.	1½ min.
	12-11-50	3,150,000			589,050			2½ min.
	12-12-50	3,000,000	8.2 gms.	5,800	396,000		8 gam.	
	12-14-50	3,200,000			352,000			
	12-15-50	2,690,000			435,180		3.3 gam.	2 min.
	12-16-50	2,940,000			323,400		0 gam.	
	12-18-50	3,260,000			406,400		0 gam.	
	12-19-50	3,360,000			435,000			3½ min.
	1-4-51	3,380,000	8.1 gms.	5,100	576,400			4 min.
	1-10-51							
IV	3-15-51							
	3-20-51	4,670,000	10.8 gms.	5,600	524,000		0 gam	4 min.
	3-21-51		Special Test				Effect of AHG in Vitro	
	4-2-51							
V	5-4-51		14.4 gms.					

Clotting Time	Clot Retraction	Prothrombin	Prothrombin Consumption	Recalcification time of oxalated plasma in sec.	Fibrinogen	Hematocrit	Treatment
21 min. (cap)							
23 min. (cap)	45 min.	75%					
12 min. (cap)							500 cc. whole blood
4 min. (cap)	10 min.	50%					
no clot							
16 min.							
1 hr. 40 min. (LW)							
10½ min. (cap)	2 hrs.						600 cc. whole blood
8 min. (cap)		43%					
49 min. (cap)		100%					
					270 mg.%		
		50%					
Over 2 hrs. (LW) Less than 17	Poor at 24 hrs.		0	105-480			
2 hrs. 10 min. (LW)							
2 hrs. 15 min. (LW)							210 mgs. Protamine Sulfate I V 11-29-50 to 12-2-50
70 min. (LW)	2 hrs. 50 min.		75%	90-130			
2 hrs. 10 min.	2 hrs. 38 min.						
1 hr. 15 min.	4 hrs. 50 min.				140 mg.%		
1 hr. 40 min.	2 hrs. 45 min.						
3 hrs. 10 min.							
2 hrs. 40 min.							
2 hrs. 35 min.	3 hrs. 30 min.						
2 hrs. 25 min.	4 hrs. 50 min.						
4 hrs. 30 min.	6 hrs.	75%					
2 hrs. 15 min.			0				
					280 mg.%		
2 hrs. 40 min.	24 hrs.	75%	0	110-292		39.5%	
	Antithrombin Titration,		Antithromboplastin Titration				
				90-180			

action of the patient's plasma on normal blood as compared with the action of plasma of another hemophiliac and with saline.

The results of this test indicate that 0.2 cc. of patient's plasma added to 1 cc. of normal blood does not change the clotting time of the mixture. However, 0.3 cc. of patient's plasma prevents the clotting of 1 cc. of normal blood. This test shows the potency of the anticoagulant present in patient's blood. Because some reports in the literature indicate the presence of an antithromboplastic activity in hemophilic plasma[6], we tested the patient's plasma for such an activity. If the anticoagulant were of an antithromboplastic nature, we would expect that after thromboplastin in decreasing concentrations was added to the patient's and to normal plasma, the normal plasma would show a gradual prolongation of clotting time with the more diluted thromboplastin. On the contrary, the patient's plasma would give the shortest clotting time with the amount of thromboplastin adequate for clotting of patient's plasma and neutralization of antithromboplastin. This concentration of thromboplastin would be higher than the one which would give the shortest clotting time with normal plasma. As can be seen from the following table, this result was not

TABLE III

CLOTTING TIME OF PATIENT'S AND NORMAL PLASMA EXPRESSED IN SECONDS

Thromboplastin sol.	Undiluted	1:200	1:500	1:800	1:1000	1:2000	1:4000	1:8000
Patient W.B.	19	18	22.5	24	22	31	33	35
Control No. 1	21	22	24.5	28	31	33	35	50
Control No. 2	21	21.5	22	26.5	28	30	35	45

obtained with the patient's plasma, suggesting therefore that there was not sufficient antithromboplastic activity to be detected by the methods we used[21] and to give an anticoagulant effect.

Antithrombic activity was found by Singer[21] in one case and therefore we examined the patient's plasma for such an activity.

Patient's plasma clotted in this same time after addition of thrombin as did the two normal plasmas. The absence of antithrombic activity of the patient's plasma could be expected after the heparin-like anticoagulant was neutralized. The mere fact that the conversion of patient's fibronogen into fibrin was completed within the normal time suggested also an absence of substances interfering with the third equation of blood clotting scheme, that is: Fibrinogen + Thrombin = Fibrin. Because of the fact that prothrombin concentration was normal during the entire period of study of this patient, we have no basis for postulating the existence of an antiprothrombic agent.

A large part of our planned study depended on the use of antihemophilic globulin which was difficult to obtain. Thanks to Dr. L. K. Diamond, we obtained enough of this globulin to carry out our studies. To begin with, we consider that any diagnosis of hemophilia should be certified by a test showing that antihemophilic globulin will bring the clotting time of the blood under study to normal[12]. This test was performed on the blood of our patient and the results reported in Table V demonstrate this principle clearly.

After we demonstrated that antihemophilic globulin brought the clotting time of patient's blood to normal, we investigated his plasma for antibodies against antihemophilic globulin which were probably built up as a result of previous transfusions. Eight cases of hemophilia with this type of anticoagulant are described in the literature[7,2].

TABLE IV

	CLOTTING TIME IN SECONDS						
Thrombin units in 0.1 cc.	5	4	2	1	.5	.25	.125
Patient's plasma	4.5	5	5	7	13	27	30
Control No. 1	4.5	5	6.5	9	14	28	29
Control No. 2	4.5	5	6	8	12	26	31

TABLE V

Patient's blood	Normal blood	Normal Saline	Antihemophilic Globulin 400 mg%	Clotting time in minutes
	1.0			8
	1.0	0.5		10
	1.0		.5	7
1.0				180
1.0		0.5		120
1.0			.5	11

Our case is the ninth instance in which this test was shown to be positive. The method used was described by J. H. Hawks[10]. We dissolved the antihemophilic globulin in a gelatin base in serial dilutions and tested with serial dilutions of patient's plasma for the presence of precipitation occurring between the gelatin solution of antihemophilic globulin and over laying plasma. In order to evaluate properly the results of this test, we examined the patient's plasma simultaneously with normal plasma, plasma from a case of hemophilia with a family history, and a case of hyperheparinemia (to be published). Neither normal plasma nor plasma from a case of hyperheparinemia showed any precipitation. The results of these tests are given in the following two Tables.

TABLE VI, a & b
CASE OF HEMOPHILIA WITH A FAMILY HISTORY

Antihemophilic Globulin Mg%	1200	400	40	4	.4	0
Plasma Dilutions						
Undiluted	0	0	0	0	0	0
1:10	0	0	±	0	0	0
1:100	0	0	+	+	+	0
1:1000	0	0	±	+	+	0
Saline	0	0	0	0	0	0

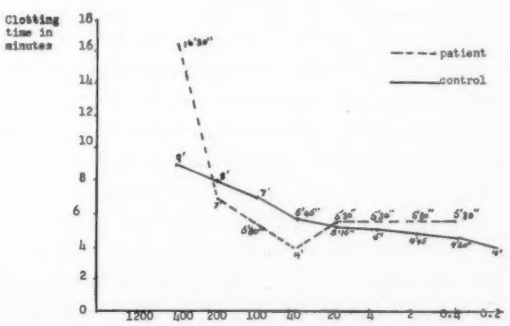
Patient W. B. under study

Antihemophilic Globulin Mg%						
Plasma Dilutions						
Undiluted	0	0	0	0	0	0
1:10	0	+	+	+	±	0
1:100	0	+	+	+	+	0
1:1000	0	±	+	+	+	0
Saline	0	0	0	0	0	0

On the basis of these results we can state that the test is specific for the presence of antibodies against antihemophilic globulin. Normal plasma or plasma from a case of hyperheparinemia clinically simulating hemophilia do not produce precipitations in any of the dilutions. A known case of hemophilia with a family history but not in a bleeding period shows precipitation mainly in a dilution of plasma 1:100 with added antihemophilic globulin in the concentrations of 40, 4, and 0.4mg%. The patient under study shows precipitation of plasma dilutions of 1:10, 1:100 and 1:1000 with antihemophilic globulin in concentrations of 400, 40, 4 and 0.4mg%. The strongest precipitation was seen when plasma was diluted 1:100.

After we determined by these tests that the patient's plasma contained an anticoagulant which was shown to be of an antibody type, we proceeded in this same direction and made an attempt to neutralize these antibodies by way of incubation with antihemophilic globulin. This was done in a qualitative manner by Lawrence and Johnson[11], and Craddock and Lawrence[7], by incubating the patient's serum with antihemophilic globulin in increasing dilutions. They observed that the antihemophilic globulin lost its accelerating activity on the clotting of hemophiliac blood after incubation with this blood for 30 minutes at 37.5°. Our quantitative modification is extremely simple and easy to perform. The only reagent needed is the antihemophilic globulin. Our preparation consisted of Cohn's Fraction I. We do not know the quantitative relationship of fibrinogen and active hemophilic globulin in this preparation. However, this should not decrease the dependability of the test because Craddock and Lawrence[7] showed that antibodies against antihemophilic globulin do not react with pure fibrinogen or pure gamma globulin, but only with antihemophilic globulin. We performed our test on normal and patient's native plasmas diluted with saline in a ratio 1:10. Of these plasmas, 0.1 cc. was added to 0.1 cc. of different dilutions of antihemophilic globulin in saline, incubated for 15 minutes at 37° and 1 cc. of whole blood of the same group as the tested plasma was added. The clotting time of this mixture was then determined. The following table and chart depict the results. These determinations were repeated five times on normal and patient's plasma and the values represent the average readings. However, the trend of these two curves was constant in all determinations.

CHART II.



DISCUSSION

The theoretical understanding of the causative factors of hemophilia are of great practical importance because the treatment is based on these theories. Quick and his group[22] consider hemophilia to be a result of a defect in platelets which fail to break down and release thromboplastin. Craddock and Lawrence[7] and Frommeyer *et al.*[2] consider hemophilia a disease connected with a congenital defect in blood plasma, namely, in absence of antihemophilic globulin. This defect may be complete or partial. Other theories include that of Munro and Jones[19], increased antithromboplastinogen, Brinkhous[20], absence of thrombocytolysin, and Tocantins[6], an excessive amount of antithromboplastin.

Our evidence supports the presumption, expressed by Dreskin and Rosenthal[9], that the antihemophilic globulin and platelets form thromboplastin, or it may be that the antihemophilic globulin is needed for the breakdown of platelets. This presumption would be a logical result of two known facts, that hemophiliacs lack this globulin and that addition of platelets reduces the clotting time of hemophilic blood[23]. This view could be supported by experiments in which antihemophilic globulin would be removed from normal blood and the platelets observed. This, however, is not possible. A reverse experiment has been performed innumerable times by adding antihemophilic globulin to hemophilic blood *in vivo* and *in vitro* and has resulted in bringing the coagulation of this blood or plasma to normal, except in cases where there were antibodies against antihemophilic globulin.

Lozner and Taylor[13] observed the interesting phenomenon that antihemophilic globulin or euglobulin prepared in glass vessels has a far more potent action on hemophilic blood than when it is prepared in non-wettable vessels such as collodion or paraffin. This introduces a possible physico-chemical influence of the vessel on the action of antihemophilic globulin on hemophiliac blood. The mounting number of hemophiliacs refractory to blood transfusions supports the opinion that transfusions and substitution of the defect by normal blood is not a solution to the problem of therapy of hemophilia. On the contrary, it starts a vicious circle of stimulation of production of antibodies against the antihemophilic globulin which is actually a foreign protein for the hemophiliac. These antibodies act as anticoagulants in a number of cases.

TABLE VII

Antihemophilic Globulin mg%	1200	400	200	40	20	4	2	.4	.2
Normal plasma	incoagul.	9 min.	8′	5′45″	5′30″	5′	4′45″	4′30″	4′
Patient's plasma	incoagul.	16′30″	7′	4′	5′30″	5′30″	5′30″	5′30″	

Mgs% of Antihemophilic Globulin.

The defect, of course, does not explain the well known fact that a hemophiliac has periods without bleeding tendency, when, at other times, he bleeds even without demonstrable trauma.

In view of these studies, we may consider the possibility that hemophiliacs should be followed over a long period of time with studies of the degree of their antihemophilic globulin deficiency as shown by Frommeyer, Epstein and Taylor[2], and presence of antibodies against antihemophilic globulin, including the estimation of their level. There is a possibility that periodic increases of antibodies against antihemophilic globulin or a decrease of the level of antihemophilic globulin itself may be correlated with these bleeding episodes. This finding, if proven, would change the method of therapy of hemophiliacs. Plasma would be used only in emergencies when cold and pressure would not stop the bleeding. Washed red blood cells would be used to substitute red blood cells lost during bleeding. We may look for ways of decreasing the level of antibodies against antihemophilic globulin. One non-specific method which may be considered is the temporary decrease of antibody production ability by the reticulo-endothelial system in general which would also influence the above antibodies. This was accomplished experimentally by many investigators (Hektoen, Jacobson and others[24]) by irradiation of the spleen with large doses of x-ray. It could be that irradiation of a hemophiliac's spleen in the presence of a high titer of antibodies against antihemophilic globulin would help to decrease this titer and stop the bleeding episode in these patients. Of course, this possibility must

be studied thoroughly on dogs, the only other mammals known to have hemophilia. Another possibility is that refractory phases in hemophilia may be found only in patients with no antihemophilic globulin because one can produce antibodies only to "foreign" proteins. This may also explain why few hemophiliacs are found to be in refractory stage, in spite of the fact that almost all hemophiliacs receive transfusions of whole blood or plasma. The mild cases (Quick[4]) may have some amount of antihemophilic globulin and therefore produce no antibodies. However, the amount of antihemophilic globulin they possess is not sufficient to activate the liberation of platelet enzyme and cause normal coagulation time.

When whole blood or plasma is given to a hemophiliac, the antihemophilic globulin in this material combines with the antibodies present and a sufficient amount of antigen is left to neutralize the antibodies which are produced constantly at an increased rate as a result of the administration of blood or plasma. However, after a while (about 3 days later) the amount of antigen is used up by the produced antibodies and the production of antibodies is still going on at an increased rate. This causes a relapse with prolonged coagulation of blood and another bleeding period which can be overcome only by administering a larger amount of whole blood or plasma. In Dreskin and Rosenthal[9], charts of 12 reported cases with a circulating anticoagulant, eight cases had sufficient evidence for presuming isoimmunization. Five of them were true hemophiliacs who developed an anticoagulant after previous blood transfusions and three were women with a circulating anticoagulant appearing shortly after parturition. The authors consider the possibility of Rh isoimmunization in these cases.

As to the treatment of cases of hemophilia with a circulating anticoagulant of the antihemophilic globulin antibody nature, it seems to us that plasma or whole blood transfusions could be justified only as life saving procedures because they increase the production of the antihemophilic globulin antibodies by introduction of additional amounts of antihemophilic globulin. The use of washed red blood cells as a means of substituting the lost red blood cells would be more consistent with the present understanding of the nature of this anticoagulant. One must also presume that a hemophiliac may have another anticoagulant, as is shown in our case of a heparin-like substance which can be neutralized by administration of protamine sulfate. The neutralization of this anticoagulant in our case caused a clinical improvement in spite of the presence of hemophilia.

Unfortunately, we could not obtain the antihemophilic globulin and study the precipitin reaction and neutralization of antibodies in this patient before we injected protamine sulfate. However, on the basis of experience of other investigators, we may assume with certainty that he had antibodies against antihemophilic globulin before the treatment with protamine sulfate. In our own experience, a patient with hyperheparinemia with a negative test for precipitation of antihemophilic globulin, has had full treatment with protamine sulfate before this test was carried out. This would exclude a possibility that protamine sulfate could cause production of antibodies against antihemophilic globulin and positive precipitin and neutralization tests in our patient.

An increased level of heparin has been detected in blood of experimental animals and in patients by authors working in this field. Cronkite[5] observed hemorrhagic manifestations in goats and swine exposed to ionizing radiation in the Bikini atomic explosion. However, in later experiments with x-ray irradiation he could not determine the circulating anticoagulant using the few available methods (personal communication).

J. G. Allen[15] exposed dogs to x-ray irradiation and produced a high level of an anticoagulant of the heparin type which could be neutralized by protamine sulfate.

Conley and Hartman[16] developed a method for determination of heparin observed after irradiation and nitrogen mustard therapy. Smith, Jacobson *et al.*[17] found heparin present in humans and rabbits after nitrogen mustard therapy.

We have used the above described method of heparin determination for about a year and performed hundreds of determinations on experimental animals (rabbits—unpublished data) and on patients. We are under the impression that the increase in heparin level is seen in cases with involvement of the reticulo-endothelial system. Damage to the reticulo-endothelial system may be done experimentally by irradiation or by disease. We have found invariably high heparin levels after x-ray irradiation of rabbits, in patients with Gauchers' disease, leukemias, neoplasms, in some cases of menorrhagias

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without known cause, and in a case of dysproteinemia[25].

We had the opportunity to use protamine sulfate in a few instances of hyperheparinemia and have observed that the therapeutic result has lasted for a period of months.

All the available information concerning the presence of heparin-like substances in blood and also our personal experience makes us think that one may expect hyperheparinemia in hemophilia too. It may be connected with the dysfunction of the reticulo-endothelial system as manifested by the deficient production of globulins, namely, antihemophilic globulin. Some of the cases reported in the literature as having an unknown circulating anticoagulant may have been caused by hyperheparinemia, as, for example, Lozner's[18] case with a history of tbc., and tbc. bacilli found in the lymph nodes during the autopsy may well be a case of hyperheparinemia.

In conclusion, we may say that the fact that a patient is a proven hemophiliac should not satisfy any physician as far as explanation of bleeding periods in the patient are concerned. One must always determine all other blood coagulation factors in order to be certain that a concomitant deficiency of any other factor or an excess of anticoagulants of any nature is not present.

Our quantitative modification of this test can be used in the future for many phases of study of hemophilia. It expresses the potency of antibodies against antihemophilic globulin in terms of their ability to neutralize the antigen. This can serve in follow-up of hemophiliacs and evaluation of their refractoriness to blood transfusions due to a high level of antibodies against antihemophilic globulin. Results of this test may also throw some light on the possible relationship between the antihemophilic globulin antibody level and bleeding episodes during the life of a hemophiliac.

SUMMARY

A case of a young Negro boy with spontaneous hemophilia is presented. Clinical and experimental studies on hemophilia are centered around this case. It is shown that the patient had two circulating anticoagulants. One of these was of the heparin type and was found during a bleeding episode. It was neutralized by treatment with protamine sulfate. In a later follow-up, another anticoagulant was found. This was of the antibody type against antihemophilic globulin. A quantitative modification of a test designed to evaluate the potency of this antibody is presented. The problem of the nature and treatment of hemophilia is discussed.

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DISCUSSION

DR. FORREST P. WHITE, Norfolk: This paper has been of special interest to me because I was on the Pediatric house staff at Medical College of Virginia hospital while Dr. Thagard, a co-author of the paper, was at Dooley Hospital. At the time this case was being studied, I was working with Dr. G. Watson James, III, on another case of hemorrhagic diathesis. Our work concerned a 19-month white male, with no definite history of familial bleeding, who had markedly prolonged bleeding and coagulation times and complete absence of clot retraction. After a rather extensive series of tests involving several patients and a normal control, we were at one time convinced that our patient did not have hemophilia but that the patient of Drs. Kupfer and Thagard did have it. They were equally convinced that their case was not hemophilic but that ours was.

By further studies we determined that our case actually did have the same coagulation defect characteristic of hemophilia. He also had some major associated defect, not apparently a circulating anticoagulant, which accounted for the defect in clot retraction. What this was we had not been able to determine when the child left the hospital.

It is with great interest that I learn that the patient discussed today was also found to have hemophilia with an associated defect. Dr. Kupfer and his associates are to be congratulated on working out this case in such fine and convincing detail. I believe they have made a significant contribution to the literature of diseases of blood coagulation. Certainly all of us who have heard of these two cases have gotten the feeling that hemophilia is an even more complicated disease than we had thought it to be.

XUM

MENTAL HEALTH

JOSEPH E. BARRETT, M.D.,
Commissioner, Department of Mental Hygiene and Hospitals

Food Service in Virginia State Mental Hospitals.*

The food service department is concerned with the production and serving of well balanced, properly prepared, appetizing meals to approximately 13,000 patients in our seven hospitals, and to the more than 2,000 employees who are a part of the hospital organization. This total of 45,000 meals daily pinnacles into 16,425,000 meals for a year. Our budget provides 60 cents per patient per day for the purchase of food and this very meager sum grows into the rather substantial figure of $2,847,000 which will be needed for food in the current year. This does not include the cost of food service personnel.

This activity involves: (1) planning the foundation menu and its variations, which must be done within the limited budget; (2) purchasing food in quantity; (3) having adequate facilities for its proper care and storage; (4) using tested methods in preparation and cooking; (5) solving the problem of getting hot and cold foods to the patient as near the ideal temperatures and textures as possible; (6) placing before the patient a meal so attractive in its eye appeal that there is no problem in inducing the patient to eat; (7) maintaining a high standard of sanitation in every activity of the food service department; (8) taking note of the fact that food preparation and its service can be of great therapeutic value to the patients.

The supervision of this varied program is carried on by the dietitians, food production managers or dietary unit supervisors, depending upon the type of supervision required in the specific departments. In view of the great shortage of trained dietitians, we are fortunate to have seven in our total organization and supervising in each hospital. We are in need of more dietitians, food production managers and supervisors. Since this shortage also carries over into the cook, baker, kitchen helper and dish washer categories, our supervisory personnel must fall back on inexperienced recruits and plan time to do the necessary training which will convert these new employees into that meticulous baker, or the accurate vegetable cook so badly needed to make a kitchen function smoothly.

Less supervision would be needed if the dietitian could go to a reliable source and there obtain the trained cook or the salad maker who combines her materials into a colorful, artistic product that tastes good, or a porter who uses his tools to the best advantage.

We have high hopes that, in the not-too-distant future, high school graduates with a basic food service training will be available for employment in the hospital food services, through a vocational training program now being developed.

The purchasing of food for the State mental hospitals is concentrated in the offices of the hospital steward and the Division of Purchases, State Finance Building. The dietitian, however, has the opportunity to list her needs, consider new products and take advantage of special market prices through the cooperation of the purchasing personnel, as well as reject anything which she does not think is up to standard.

Staple foods are bought on a quarterly basis; meats and fish on a weekly basis; and perishable foods as needed. All purchases are made by the competitive bid system with the exception of the foods produced on the hospital farms. A nominal price schedule is set up for the purchase of these products by the Division of Purchases with several factors considered in arriving at the value of the products.

Since these farms are large, there is usually a surplus produced over and above the patients' immediate needs and plans must be made for preserving the surplus or using it at once. One of the hospitals has worked out a method to freeze these surpluses and last year 90,000 pounds of vegetables were frozen and later used to bolster holiday and special winter menus. This type of product is a great time saver at the busy season of the year when there is a greater scarcity of labor and increased activities. In addition, the cost is very low and the quality high.

*Article by Una S. Powell, B.S., Food Service Supervisor, State Department of Mental Hygiene and Hospitals.

In the purchasing and storage of foods we have an important key to the economical operation of a food service department through the control of waste. This can be done by observing the following regulations:

(1) Purchase of good quality to begin with, supported by carefully drawn specifications.

(2) Careful and conscientious inspection of the purchase and the stamping of all staples and perishables with both the date and the cost.

(3) Proper storage of these purchases with respect to quality and quantity.

(4) Control of nutrient loss in raw food storage of perishable fruits and vegetables through not overstocking the items.

(5) Eliminating theft and even the temptation to theft by the liberal use of locks and keys, plus constant supervision.

(6) Correct issuing of foods from the storeroom to the kitchen with the aid of signed requisitions and a store clerk trained to sort products *either* for ripeness or to issue the oldest item first.

(7) Planning for the use of foods on hand before making new purchases.

(8) Having all meats inspected for quality, legitimacy of cuts (based on U. S. Department of Agriculture standards), correct weight and fulfillment of specifications.

This is done under the U. S. Division of Marketing Meat Inspection Department and all meat purchased bears the stamp of inspection. The inspector also visits the hospital frequently, checking meats in the refrigerator to see for himself if the products stamped for purchase were delivered to the hospital refrigerator.

The amount of money appropriated for the purchase of food was increased at the last legislative session from 50 cents to 60 cents per patient per day for the next biennium, July 1, 1952, through June 30, 1954. With the inflationary spiral gradually creeping upwards, it is doubtful that this 60 cents will have the purchasing power of the 50 cents appropriated for the past 2 years.

However, it must provide food for the general hospital menu, a large number of special diets three times each day, the Fourth of July picnic for all the patients; turkey for the Thanksgiving dinner; refreshments for small-group activities and parties; a special Christmas dinner, and the birthday cakes. All of these are important for they bring the home and family touch into institutional life. With today's cost of living 189% above the 1935-39 level, it will take careful planning to make our money pattern cover all these needs for the next two years.

In planning the general menu to fit within the limited budget, we build it around a basic ration of 3361 calories or 68.1 ounces of food, which we believe to be the amount of food necessary for the activity of the patient and the improvement of health. The menu is selected from the seven basic food groups which nutritionists have named "the design for better living". These basic food groups consist of:

(1) Leafy and green vegetables
(2) Meat, poultry, fish and eggs
(3) Citrus fruits, tomatoes, raw cabbage
(4) Other fruits and vegetables, including potatoes
(5) Milk, cheese and milk products
(6) Bread, flour, cereals
(7) Butter, fortified margarine, cream

The following is a breakdown of the general menu to show the number of calories and ounces of food selected from each group to make the 3361 calories and 68.1 ounces of food for the basic ration.

	Ounces	Calories
Milk and milk products (fresh, evaporated, powdered, ice cream)	16.0	330
Potatoes (sweet and white)	6.0	209
Dry Bean, peas & nuts	1.0	145
Citrus fruits & tomatoes	5.0	39
Green and yellow vegetables	10.0	98
Other fruits	6.0	155
Eggs (shell, frozen. dried)	1.6	79
Lean meat, fish, poultry	8.0	581
Cheese	0.5	60
Flour, cereal, cakes, crackers	10.0	1054
Butter and margarine	1.0	190
Fats (fat meat, lard)	1.0	216
Sugar	1.0	120
Syrups and sweets	1.0	85
Miscellaneous (coffee, tea, etc.)	—	—
	68.1	3361

There has been some criticism of the use of a basic ration, namely, that it does not allow enough elasticity for the menu making program. It does, however, serve as a measuring guide against which one can check the menus for a varied diet, calorie count and volume of food served. It is a special

protection in departments where there is no dietitian. A menu maker with imagination and a keen interest can provide varied menus with all the flavor, color and texture one could desire and have a basic ration in the background to work with. Basic rations should be scanned occasionally with a view to progressive changes.

The dietitian refers to the general menu written for a specific day and selects from it all the allowable foods for the special and corrective diets. This process lessens the number of preparations for a busy kitchen and saves time in planning. These special diets are served on doctors' orders and the dietitian gives time and real thought to them. She checks for:

(1) Careful preparation of the food served
(2) Good flavor and food texture
(3) Pleasant color and food combinations
(4) Food habits of the group she is planning for. Social, religious and sectional customs are followed wherever possible
(5) Likes and dislikes of patients

We have an additional serving problem of providing food for the aged patients of the hospital. This is a rather large group which must have ground foods and specially prepared foods to care for their needs.

Three years ago emphasis was placed on improving the food service department of our State Hospitals through the modernization of the preparation, cooking and serving areas. Plans were made for remodeling kitchens in several hospitals where it was feasible and for building new ones where the old ones would no longer serve the purpose. In this program the plan was made for modern, efficient kitchens; pleasant dining rooms, showing homelike touches and the introduction of modern cafeteria service to the ambulatory patients.

I would like to cite one new general kitchen in this program which produces food for approximately 1200 patients and 200 employees three times each day. An all-electric kitchen was installed. All stoves, baking ovens, etc., were equipped with temperature controls, because food cooked at the proper temperature for the correct period of time has an attractive appearance, better texture and superior flavor. After one week of operation in this new kitchen we found that the former eight cans of garbage were reduced to two cans per day because the patients were eating all the food served to them. This was a very satisfying economy.

In a newly equipped bakery unit in this same kitchen we found we were using 1,300 pounds of bread flour less per week and baking more bread. This was due to the improved method of weighing and mixing the ingredients and baking the bread. As a result of this improved method, we have no loss in the slicing of the bread. There are only two end slices of each loaf left. At the end of the bread slicing operation the end slices are sent to the kitchen and chopped into fresh bread crumbs, ready for immediate use. We have calculated that this economy over a period of a year would approximate $5,000.00 at the present market prices.

We have a new labor and time saving piece of equipment in the electric vegetable cutter we are using in this same kitchen which does three jobs at once, with only one person required to operate the machine. In 60 seconds it will produce one or three of the following products ready for use:

12 lbs. French fried potatoes
4 lbs. Shoestring potatoes
20 lbs. Potato chips
20 lbs. Chopped vegetables for soup
15 lbs. Cabbage slaw
8 lbs. Finely chopped vegetables
16 lbs. Coarsely chopped vegetables

Time saving pieces of equipment take the place of extra employees who are difficult to get and reflect in saved payroll dollars. In addition, this process of quickly handling these foods brings them to the table much fresher, uniformly prepared and assures a thorough, even cooking of the foods.

There is a need to justify the expenditure of funds for new equipment which, at the first glance, seems very expensive. One of the Midwest veterans hospitals made the following comparative studies before purchasing the above mentioned vegetable cutter.

Test No. 1—Cutting and dicing vegetables by hand as compared with the electric vegetable cutter. Potatoes, carrots and rutabagas were diced. It was found that this work could be accomplished by machine in 1/3 of the time required by hand labor.

Test No. 2—Preparing cabbage slaw (160 lbs. shredded) required 210 minutes by hand; 160 lbs. shredded required 70 minutes by machine.

Test No. 3—Fruits and vegetables prepared for one week. All fruits and vegetables diced, sliced

or shredded by hand required 84 man hours. The same amount prepared by machine required 28 man hours.

The saving in labor was $49.00 per week and the hospital superintendent estimated that this savings alone would pay for the machine in 14 weeks time. The added advantages were:

(1) Strict uniformity of cutting, dicing, slicing and shredding of food materials.

(2) Improved appearance of the products.

(3) End result of obtaining a definite number of servings per 100 lbs. of food purchased.

We have ordered an automatic food shaping machine after watching its performance in one of our large colleges where uniformity of performance has resulted in using 300 lbs. of ground beef where 400 lbs. were formerly required when all meat patties were shaped by hand and they gradually grew larger as the worker shaped the four hundredth patty. Where three people were necessary for the hand process, one person now does the work nicely with the machine process.

A test was made in a second hospital to facilitate making hamburgers, sausage patties, corned beef hash cakes by use of this automatic shaping machine. Here is the result:

(1) The work of molding beef patties by hand required 8½ man hours, involving four cooks. The same work by machine was done in 45 minutes by one cook.

(2) The cost of hand labor was $6.03 while the same volume was produced by the machine at a cost of 51 cents.

The purchase price of the machine was $550.00 and this hospital's administrator estimated that the purchase cost would be saved in 12 weeks. In addition, this hospital reported that the cost of repair and upkeep on this machine after one year's very hard use has been negligible.

Efficient equipment helps to raise the standards in food preparation and stimulates a higher type of performance by all employees down the line, with the fatigue element considerably lessened.

At Southwestern State Hospital two new cafeterias for men and women patients are equipped with modern and efficient equipment which has been successfully tested in the commercial food field. Efficiency in production and serving is as necessary in the hospital as in the commercial food field where the sale of flavorful food pays the owner's salary if the customers continue to come back.

These cafeterias have improved the standards of food service and made it possible to:

(1) Serve hot foods hot.

(2) Serve cold foods cold.

(3) To introduce another economy in control of portions where one person does the serving of an item to a large group.

(4) To serve the larger groups in a reasonable period of time and to do it more conveniently.

As we are able to obtain the necessary cafeteria employees we plan to have a greater variety of foods on the menu daily and offer the patient a choice of meat, vegetable, fruit or dessert as part of the therapy program. The new dining rooms serviced by these cafeterias are a pleasant change from the former institutional dining room. With peach tinted walls, colorful draperies at the windows and mahogany four-chair tables with moss green tops, they offer a cheery atmosphere. Knives, forks and spoons are used as part of the therapy program also and there has been no difficulty.

Drinking fountains in the dining rooms and refrigerated milk dispensers at the cafeteria counters were installed for their convenience, to improve the service and to eliminate the investment involved in milk bottles, bottle washing and sterilizing machines, as well as the extra labor needed to carry on the above services.

These pleasant dining rooms raised the standard of table manners for many of the patients and we saw them use greater care to prevent spilling food on the floor. They expressed their admiration for "the pretty curtains and nice tables". A new interest in personal standards of neatness was noted by food service employees in several instances.

Since the food service department is a manufacturing department in which several operations are required it may well serve as a part of the occupational therapy program. The performance of small tasks provides activity for the patient; it can add variety to the day's routine, and latent talents may be brought to the surface. New skills can be developed which will form the basis for employment and independence when the patient leaves the hospital.

It can readily be seen that the food service department of a large mental hospital offers a real challenge.

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PUBLIC HEALTH

MACK I. SHANHOLTZ, M.D.
State Health Commissioner of Virginia

Typhoid Fever Control

The decline in the incidence of typhoid fever in Virginia over the past forty years is shown by the following table:

Year	Reported Cases	Case Rate*	Year	Reported Cases	Case Rate*	Year	Reported Cases	Case Rate*	Year	Reported Cases	Case Rate*
1910	7285	353.4	1921	2845	123.4	1932	1100	44.4	1943	198	6.9
1911	6744	322.9	1922	1827	78.2	1933	960	38.3	1944	127	4.5
1912	4292	202.8	1923	1990	84.8	1934	755	29.8	1945	158	5.6
1913	6503	303.4	1924	1510	64.0	1935	733	28.7	1946	116	3.9
1914	4610	212.5	1925	2100	88.6	1936	559	21.7	1947	124	4.0
1915	5193	236.6	1926	1596	67.0	1937	561	21.5	1948	110	3.5
1916	4503	202.8	1927	1403	58.7	1938	491	18.6	1949	116	3.7
1917	3515	156.5	1928	1023	42.6	1939	431	16.2	1950	68	2.0
1918	2416	106.4	1929	853	35.3	1940	256	9.6	1951	61	1.8
1919	2731	118.9	1930	1413	58.3	1941	319	11.9	1952	64+	——
1920	1888	81.8	1931	1541	62.8	1942	242	8.6			

*Rate per 100,000 population

+Thru Sept. 30, 1952

These figures are reassuring and are a credit to community efforts in public health. These community measures have as their aim environmental sanitation through the establishment of safe water supplies, sanitary sewage disposal and the regulation of milk sources and distribution.

Reviewing these accomplishments and noting the decline in the reported cases of typhoid fever, we must check a tendency to become over-confident. The disease is relatively well controlled but it has not been eradicated. Final eradication depends on control and elimination of the reservoir of carriers—known and unknown—which exists in the population and which gets additions each year.

With the exception of those recently immunized during service in the armed forces, the general public remains susceptible. It is obvious that any break in the protective barrier of sanitation might result in serious consequences.

The human carrier is the existing reservoir for the typhoid organism. The Virginia typhoid carrier file contains the names of 118 persons. To these are added yearly an estimated 3% of typhoid fever cases in whom the carrier state persists. It is upon the detection and supervision of this group that control depends.

The supervision of chronic carriers is the responsibility of the local health department. The chronic carrier is defined as one who still shows the organism one year after infection. In carrying out this responsibility the following rules should be observed:

1. A list of all carriers should be kept. The carriers should be instructed to report change of residence and the local health authority of the new jurisdiction should be informed.

2. The carrier should be instructed regarding the importance of personal hygiene and his responsibility to the community.

3. Members of carriers' families should be immunized against typhoid.

4. The carrier must be warned not to handle food or milk except in his own home, for himself or for the immediate family, who have been immunized against typhoid fever.

The early hope that the carrier rate might be reduced in persons treated with chloramphenicol has not been justified. Cecil states that cholecystectomy will eradicate the carrier state in about 90% of cases.

Through September 30, 1952 the number of cases of typhoid fever reported in Virginia from thirty-two counties and one city was 64. This is three more than were reported in 1951 and emphasizes the importance of continuing vigilance in the finding and follow-up of the typhoid case and carrier.

MONTHLY REPORT OF THE BUREAU OF COMMUNICABLE DISEASE CONTROL

	Sept. 1952	Sept. 1951	Jan.-Sept. 1952	Jan.-Sept. 1951
Brucellosis	6	12	33	66
Diarrhea & Dysentery	218	537	1954	2302
Diphtheria	17	12	73	88
Hepatitis	69	6	552	18
Measles	45	65	15335	13746
Meningitis (Meningococcic)	6	8	150	95
Poliomyelitis	175	97	522	191
Rabies in Animals	25	22	371	170
Rocky Mt. Spotted fever	11	6	71	58
Scarlet fever	8	39	555	741
Tularemia	8	3	41	33
Typhoid & Paratyphoid	3	7	70	41

BOOK ANNOUNCEMENTS

Diagnostic Bacteriology. A Textbook for the Isolation and Identification of Pathogenic Bacteria. By ISABELLE GILBERT SCHAUB, A.B., Technical Director, Clinical Bacteriology Laboratories, The Johns Hopkins Hospital; etc. And M. KATHLEEN FOLEY, M.A., Instructor in Bacteriology, Department of Biological Sciences, College of Notre Dame of Maryland; etc. Fourth Edition. St. Louis, The C. V. Mosby Company. 1952. 356 pages. Cloth. Price $4.50.

Schaub and Foley is not a textbook. It is an efficient and comprehensive handbook of diagnostic procedures. Such a book with its concise directions and time saving index is essential to a busy laboratory large or small. In a physician's office where there are relatively few bacteriological examinations in the midst of a welter of other work or in a large hospital laboratory devoted exclusively to bacteriology, the book can be a great aid in streamlining necessary for modern therapy based upon bacteriological results.

The fourth edition of Schaub and Foley has been shortened by almost 200 pages by the omission of blank note pages contained in the former publication. Many of its chapters have been revised and brought up to date. An entire section composed of 3 chapters has been devoted to the "Determination of the Sensitivity of Bacteria to Antibiotics." Assay of sensitivities has, of course, stepped in to consume a large proportion of the Bacteriologist's time in the diagnostic laboratory. Schaub and Foley have kept pace with this new emphasis by increasing from 2½ pages to 28 pages the directions devoted to these techniques.

The section on "Media, Stain and Staining Technique, Reagents and Tests" has also been thoroughly worked over and valuable additions made. Notable among these additions are the trypticase media and those which aid in the isolation and identification of the Salmonella and Shigella groups of organisms. No attempt is made to duplicate the time-honored media manuals published by the producers of the dehydrated products but rather to limit instruction to the preparation of those media made from basic ingredients.

In the publication of the fourth edition of Schaub and Foley the diagnostic bacteriologist is given a further improvement on an already excellent handbook.

M. J.

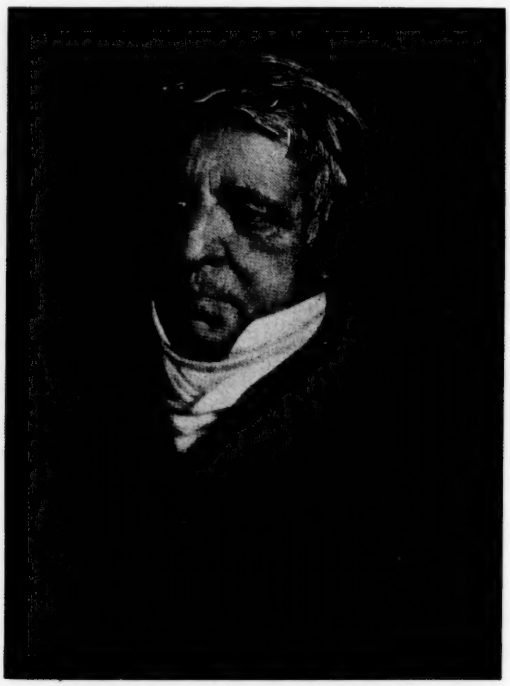
EDITORIAL

Nathaniel Chapman (1780-1853)

Arma virumque cano Troiae qui primus ab oris

THE hero of whom we sing left his native Virginia at the age of seventeen and went to Philadelphia where he had neither friends nor fortune. Here he rose to the top by sheer wit and wisdom. He became a professor in the university, started a postgraduate school, enjoyed as much of an opulent practice as he had time for, married a Biddle, and founded and was the editor of a medical journal that was, and still is, one of the best in the world.

For more than 200 years Philadelphia has been noted for its medicine, medicine with a background you might call it. Among its well known medical schools is the



NATHANIEL CHAPMAN, M.D.

oldest one in the country which is still one of the best and among its great hospitals is one founded by Benjamin Franklin. It has one of the greatest medical libraries in the world. Much of the medical literature is printed by its great publishing companies. Its leaders in the medical profession have been men of éclat. Medical students come from all over the world. Occasionally one or two from the outside world stay and join the hierarchy. At the beginning of the 19th century four Virginians stood in the top ranks of the Philadelphia profession, Chapman, Horner, Mitchell, and Műtter, and the greatest of these was Chapman.

Nathaniel Chapman was a Virginian of Virginians. His first colonial ancestor, a relative of Sir Walter Raleigh, came to Virginia with the first colonists and settled

on the Pamunkey River. This estate is still in the family. About 1700 a branch of the family moved to Maryland and settled on the Potomac nearly opposite Mt. Vernon. They called their new home Pamunkey. George Chapman moved back to Virginia and married Amelia Macrae, the daughter of Allan Macrae of Dumfries. Nathaniel, the second son of this marriage, was born at Summer Hill on the south shore of the Potomac in Fairfax County, on the 28th of May, 1780.

For six years he went to The Academy in Alexandria, at that time under the direction of the Rev. Dr. McCrath, where he was grounded in sound scholarship. He then read medicine for two years under Dr. John Weems of Georgetown and Dr. Elisha Dick of Alexandria. In 1797 he went to Philadelphia where he soon became the favorite pupil of Dr. Benjamin Rush. He was graduated from the University of Pennsylvania in 1800 with a thesis on hydrophobia. He then went abroad for three years. In London he studied under Abernathy. After a sojourn of two years in Edinburgh, he returned to the United States in 1804 and that same year he married Rebecca the daughter of Col. Clement Biddle.

When he returned from Edinburgh he was offered a partnership by his old preceptor, Dr. Weems, but the second generation, students of Rush and Physick, were beginning to take over in Philadelphia and he cast his lot with that city. Shippen held the chair, or settee as Oliver Wendell Holmes called such arrangements, of anatomy, surgery and midwifery, and Caspar Wistar was firmly entrenched in anatomy as assistant. Wistar was anxious to be rid of obstetrics and James, Chapman and Dewees were teaching obstetrics privately. The four began a campaign for a separate chair in obstetrics. Finally in 1810 the trustees of the university established an optional chair and elected James professor and Chapman assistant. Dewees was left to his private teaching. Upon the death of Rush in 1813, there was a rearrangement of the faculty, and Chapman became professor of materia medica. In 1817 Chapman established the Medical Institute of Philadelphia, a postgraduate school with summer lectures. Dewees took an active part in the teaching here as did Horner of the *tensor tarsi* fame who had by this time come to Philadelphia.

Among Chapman's conferees of this period should be mentioned Joseph Hartshorne, a fellow alumnus of the Alexandria Academy, who in spite of a crippling deformity rose to prominence in the medical profession in Philadelphia. His deformity was acquired at the age of five; "having been exposed to cold while under the influence of calomel, at the close of an attack of small-pox, his feet were attacked with a deep-seated suppurative inflammation, which was allowed to produce a permanent contraction and flexion of the toes, and consequent incurable deformity and lameness." He was resident and librarian of the Pennsylvania Hospital and prepared a catalogue of its library. He was the special protégé of Professor Wistar, and upon Wistar's death in 1818 he fell heir to most of his practice. When the chair of surgery in the University became vacant by reason of Dr. Physick being transferred to anatomy, Hartshorne came within one vote of being elected professor of Surgery, losing to William Gibson.

Charles Caldwell, a North Carolinian, was another colleague of this period, but he was a temperamental misfit, and he left Philadelphia to found medical schools in Lexington and Louisville, Kentucky. Then there were John Syng Dorsey, a nephew of Phillip Syng Physick, Samuel Jackson, and J. K. Mitchell. Such were Chapman's associates in the first quarter of the 19th century.

XUM

In 1813 Chapman became professor of materia medica and in 1816 he succeeded to Rush's old chair, the theory and practice of medicine and clinical medicine, at the University of Pennsylvania. The next year appeared his great work on therapeutics which went through six editions.

In 1820 Chapman began the publication of the *Philadelphia Journal of the Medical and Physical Sciences,* the first number of which was dedicated to Dr. James McClurg. It is said that he created his journal in order to refute the disparaging remark made in the Edinburgh Review by the Rev. Mr. Sydney Smith: "In the four quarters of the globe, who reads an American Book? or goes to an American play? or looks at an American picture or statue? What does the world yet owe to American physicians or surgeons?" As long as Chapman remained the sole editor, this quotation appeared on the title page of the journal. (Bull. Med. Library Ass. 40:252, 1952).

In 1824 John D. Godman became co-editor, a position he held until his death six years later. Dr. W. P. Dewees was also on the editorial staff. He is listed as a collaborator in every number until his death in 1841. The journal continues to this day under the name of the *American Journal of the Medical Sciences.* It has always been one of the best medical journals of this country. In 1847 Chapman was chosen the first president of the American Medical Association. Three years later he retired from practice because of failing health. He died at his home on July 1, 1853 at the age of seventy-five years.

Chapman was successful in everything he undertook. He was always gay, jovial, and witty, and, as he grew older, his habit of punning increased. It was said that in the sick room his ever ready joke was frequently more effective than an anodyne. This may have been good therapy, but to say that his jokes put the patient to sleep was a doubtful compliment.

Haste by Ambulance Makes Waste

THE recent accident at Ryland and Grace Streets in Richmond in which a private car driven by a lady marine was totally destroyed, a city ambulance was overturned, and a water plug broken off causing a flooding of the street and great inconvenience to a number of citizens on their way to work, poses the question of how fast should an ambulance go? Fortunately no one was injured in this accident. The property damage amounted to $2300. A second ambulance found the patient pacing the sidewalk in front of his house. His only complaint was a headache. He was taken to the emergency room of the hospital and given a couple of aspirin tablets.

The difference between safe driving and reckless driving amounts to probably 5 minutes, or at the most 10 minutes, in reaching the destination if all goes well. We can imagine cases of stab wounds, deep razor wounds of the throat, asphyxia from gas poisoning in which minutes could make a difference in the outcome. As a matter of fact the great majority of injuries can be handled very well by a neighbor or bystander, now that first aid training by the Red Cross has become well nigh universal. In cases of asphyxia, gas poisoning, and electric shock, there is no need of rush treatment by ambulances, since they are best treated by the local fireman who has the training and equipment, including pulmometer and antidotes for poisons, for emergency treatment.

Do any of the *Monthly's* readers know of a case where a delay of minutes in ambulance service actually jeopardized the patient's recovery? We would like to publish any such case or cases.

So serious is this problem that the Richmond Board of Health has appointed a committee of twelve representative citizens who have been studying all phases of ambulance service.

Diabetes Detection Week

DIABETES Detection Week is becoming somewhat of an annual national affair. The impetus for this idea, promulgated by the American Diabetes Association for focusing attention on one of the ten chief causes of death in this country, has arisen as much through the state and local units of the practicing physicians as from the diabetes society.

At a recent meeting of the Virginia Diabetes Association, it was decided that official action of this society should be limited. The Detection Drive should be fostered by and under the supervision of each local medical society. The actual work requires the time and cooperation of nearly every physician in the community. A real organization and plan must be developed if the drive is to be worthwhile. Help from government medicine, such as the Public Health Department, is not considered desirable. In view of these beliefs the Virginia Diabetes Association has decided to ask one community or area to undertake such a project to see what can be accomplished. It seems obvious that the worth of the project depends largely upon the interest of the physicians in each community. The results of this project for this year will influence future recommendations.

W.R.J.

Floral Eponym

SCIRPUS TABERNAEMONTANI

TABERNAEMONTANUS, JACOB THEODOR, 1520-1590

This German physician was born in Bergzabern. He began as an apothecary at Wissembough but later studied medicine. He became physician to the Elector and Bishop at Speyer and later to the Palsgrave at Zweibrücken. He died in Heidelberg. In addition to being a doctor he was a celebrated botanist. He is commemorated by three floral eponyms.

Scirpus tabernaemontani is one of the bulrush genus. It is closely related to *Cyperus papyrus*, the paper-making papyrus of the Egyptians.

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SOCIETIES

The Fairfax County Medical Society

Met in the new building of the Falls Church Medical Center on September 9th. Before the meeting, a tour was made of the building which is located on Wilson Drive.

The question of immunization for tetanus for the total population was discussed and will be further discussed at a later meeting.

Officers were elected for the new year as follows: President, Dr. Claude Cooper, Annandale; Vice-President, Dr. T. B. McCord, Fairfax; Secretary, Dr. William Harris, Falls Church; and Treasurer, Dr. Paul Kemp, Falls Church.

A committee was appointed to arrange for the annual dinner, Dr. Stiegler of Falls Church as Chairman.

The question of selecting a voting representative from Northern Virginia in the District of Columbia Group Hospitalization Medical Service Benefit plan was discussed. Dr. Zylman was selected from the Fairfax County Medical Society to meet with others designated from northern Virginia and to discuss the question. The physicians of the county were urged to make broader use of the Instructive Visiting Nurse service. The headquarters of this service are located in the Jesse Building in Fairfax. Unless there is a great emergency and a doctor can not be reached, the service prefers to make all of its initial calls upon a physician's recommendation.

The next meeting will be held on the second Tuesday in October at the home of Dr. Robert Muilenburg at Falls Church.

ALICE H. KIESSLING, M.D.

The Loudoun County Medical Society

Met in Leesburg on October the 7th and, at this time, elected the following officers for the year 1953: President, Dr. D. T. Saffer, Middleburg; vice-presidents, Dr. C. G. Souder and Dr. Harold Jackson, both of Leesburg; and secretary-treasurer, Dr. Joseph M. Rogers, Leesburg.

The Wise County Medical Society

Had a dinner meeting at Hotel Norton on September 24, with an attendance of twenty-eight. The doctors were delighted with an authoritative presentation by Drs. R. G. Nichols, S. Domm, G. Mahon and D. H. Waterman of Knoxville, Tenn., who had just returned from a lecture tour in South America, where the lectures were given in Portuguese and French. These doctors are known as the Knoxville Chest Group on Antibiotics and General Problems in Lung Diseases. Two new members were elected and several applications were presented to be acted on at the meeting on November 12.

Dr. L. E. Ball and Dr. Frank E. Handy were appointed as a fluorination committee to report in November. The Society voted 100% against deletion of the word "white" from the Constitution of the State Society and the delegate to the Richmond meeting was so instructed to vote.

T. J. TUDOR,
Secretary-Treasurer.

The Medical Association of the Valley of Virginia

Held its semi-annual meeting at the Ingleside Hotel near Staunton on September 25, under the presidency of Dr. Charles L. Savage of Waynesboro. There was a morning session at which time clinical cases were reported as follows:

A Mass in the Left Upper Quadrant—Dr. W. A. MacIlwaine, Waynesboro

Ventricular Tachycardia and Fibrillation Associated with Myocardial Infarction—Dr. Julio Ibarra, Clifton Forge

Chronic Renal Failure with Conservative Management—Dr. John H. Guss, Staunton

The guest speaker was Dr. Sherman Mellinkoff, Associate in the Department of Medicine at Johns Hopkins Hospital, Baltimore, who spoke on The Pathological Physiology of the Kidney with Reference to Modern Therapy.

Luncheon was served at 1:30, following which there was a discussion period and a business session. At this time, Dr. Louis K. Woodward, Jr., of Woodstock, was elected president for the coming year and Dr. McKelden Smith of Staunton was re-elected secretary.

Roanoke Academy of Medicine.

At the regular meeting of the Academy on October 6th, the program was turned over to the new president, Dr. John E. Gardner, who gave his Presidential address.

NEWS

Annual Meeting, The Medical Society of Virginia.

The 105th annual meeting of The Medical Society of Virginia was held from September 28 to October 1, at Richmond's Hotel Jefferson, under the presidency of Dr. J. T. T. Hundley of Lynchburg.

A total registration of 1158 attended the four-day meeting, which featured a well-rounded scientific program and a full schedule of group luncheons and meetings.

Dr. James L. Hamner, Mannboro, was installed as President of the Society during the general session Wednesday morning. New officers are Dr. Vincent W. Archer, Charlottesville, President-Elect, Dr. Kinloch Nelson, Richmond, First Vice-President, Dr. Snowden C. Hall, Jr., Danville, Second Vice-President, and Dr. W. C. Welburn, Arlington, Third Vice-President.

Members of Council elected during the session were Dr. Walter P. Adams, Norfolk, Second District (reelected), Dr. Wilkins J. Ozlin, South Hill, Fourth District (reelected), Dr. Frank A. Farmer, Roanoke, Sixth District (reelected), Dr. Claude A. Nunnally, Fredericksburg, Eighth District, and Dr. James W. Love, Alexandria, Tenth District.

Dr. Carrington Williams, Sr., Richmond, was elected a delegate to the American Medical Association for a two year term beginning January 1, 1953. His alternate will be Dr. J. Morrison Hutcheson, Richmond.

Highlighting the social festivities was the Tuesday evening banquet attended by 525 members and guests. Earlier, the Woman's Auxiliary had enjoyed a delightful luncheon and fashion show at the Commonwealth Club.

The Monday evening general session featured addresses by Governor John S. Battle, Rear Admiral Lamont Pugh, and Dr. John T. T. Hundley. Members of the Fifty Year Club were also presented certificates at that time.

It was decided to hold the 1953 annual meeting of the Society in Roanoke from October 18-21.

The full report of the meetings of Council and the House of Delegates will be published in the December issue of the MONTHLY.

The American Academy of General Practice

Announces its Fifth Annual Scientific Assembly, to be held in Kiel Auditorium, Saint Louis, on March 23 to 26, 1953.

The program is being designed to give the general practitioner four days of "solid, meaty education in the diagnostic procedures, therapies and techniques useful in everyday practice", according to Dr. Merlin Newkirk, of South Gate, California, Chairman of the Committee on Scientific Assembly. It will cover seven principal subject areas: Pediatrics, physical examinations, industrial medicine, anesthesia, surgery, medical treatment, and cardiology.

The complete list of speakers has not been released, but will include such names as Richard Cattell, M.D., of the Lahey Clinic; Crenston Holman, M.D., of New York; Gradie R. Rowntree, M.D., Louisville, Ky.; Elmer Hess, M.D., Erie, Pa.; Arild Hansen, M.D., University of Texas; and Pinson Neal, M.D., University of Missouri.

The Scientific Exhibit Section will contain 60 carefully selected educational displays (several of them created specifically for this meeting) all closely integrated with the formal lecture program. Through this recently developed technique in program planning, the Academy is able to visually supplement the oral presentations from the lecture platform with related exhibits which may be studied by the physician at leisure.

The University of Virginia School of Medicine

Opened the year's series of postgraduate conferences for general physicians of the state with a conference on cardiovascular disease, October 24.

Speakers included Dr. Howard B. Sprague, Chief of Staff, House of Good Samaritan, and Associate Physician, Massachusetts General Hospital, on "Fear of Heart Disease"; Dr. Julian R. Beckwith, Chief, Department of Internal Medicine, Chesapeake & Ohio Hospital, Clifton Forge, on "The Problems of Arrhythymias in Practice"; Dr. Edward S. Orgain, Professor of Medicine and Director of the Cardiovascular Service, Duke University, on "The Management of Hypertension with Particular Reference to Newer Drug Therapy", and members of the faculty of the School of Medicine.

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Other postgraduate conferences scheduled for the academic year 1952-53 are "Problems of Infancy in General Practice" on January 16, and "Diabetes and Its Complications" on April 17.

The University of Virginia School of Medicine

Commenced its Schedule of Graduate Lectures on October 6 at which time Dr. Harry M. Weber of the Mayo Clinic spoke on Clinical Indications for an X-Ray Examination of the Gastro-Intestinal Tract. On October 13 Dr. Harris Isbell of the Public Health Service Hospital at Lexington, Kentucky had as his subject The Clinical Manifestations of Drug Addiction. The subject on October 20 was Motor Disturbances of the Intestine by Dr. Thomas P. Almy of Cornell University Medical College. On October 24, in conjunction with the Conference on Cardiovascular Diseases Dr. Howard Sprague of the Massachusetts General Hospital lectured on Fear of Heart Disease.

The other lectures for the month of November and December 1 are:

November 3—Guest Speaker: Dr. Henry K. Beecher, Anaesthetist-in-Chief, Massachusetts General Hospital—"The Relief of Pain with Chemical Agents".

November 10—A.O.A. Lectureship, Guest Speaker: (to be announced)

November 17—Guest Speaker: Dr. Arthur C. Curtis, Department of Dermatology, University of Michigan Hospital—"Sarcoidosis".

November 24—Guest Speaker: Dr. J. Burns Amberson, Bellevue Hospital—"The Management of Tuberculosis in View of Recent Advances".

December 1—Guest Speaker: Dr. John C. Whitehorn, Psychiatrist-in-Chief, Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital—"Psychiatry and Medical Education."

These will be on consecutive Monday evenings at 8:00 p.m. in the Medical School Auditorium, unless notice is given to the contrary, and physicians throughout the State may avail themselves of the opportunity to attend them.

The Clinical Society of the Virginia Diabetes Association

Will hold its annual meeting at the Baruch Auditorium at the Medical College of Virginia, Richmond. The time of the meeting is from 2:00-5:00 P.M., Friday, afternoon, November 7th. Dr. Alexander Marble of the Joslin group of Boston will be the guest speaker.

The program is as follows:

1. "Diagnosing Diabetes"—Dr. Callier Salley, Norfolk
2. "Problems Encountered in the Diabetics in Country Practice"—Dr. James Hamner, Mannboro
3. "NPH Insulin"—Dr. Thomas Edwards, Charlottesville
4. "The Complications of Diabetes and Their Prevention"—Dr. Alexander Marble, Boston, Mass.
5. "The Effect of Hypoglycemia on the Diabetic Heart"—Dr. W. R. Chitwood, Wytheville
6. "Transmetatarsal Amputation in the Diabetic" —Dr. Harry Warthen, Richmond
7. Panel
   1. Discussion of Papers
   2. Questions from the Floor

All members of The Medical Society of Virginia are eligible for membership in the society. Application for membership should be made to Dr. William A. Read, Newport News, Va.

This meeting is sponsored jointly by the Committee on Postgraduate Education of The Medical Society of Virginia and by the Medical College of Virginia.

TV Shows to Highlight Denver Meeting.

Plans are being made to present two half-hour network television shows covering high points of the American Medical Association's sixth annual Clinical Session in December. Originating from Denver, the telecasts will highlight Session activities, including presentations of new surgical and clinical demonstrations, special scientific exhibits and other interesting medical features. The programs will be of interest to physicians who cannot attend the meeting as well as to the general public.

Present plans call for coast-to-coast coverage on two different nights during the meeting, December 2-5. Once again the programs are being sponsored by Smith, Kline and French, Philadelphia pharmaceutical firm.

Dr. Charles L. Outland,

Medical director of the Richmond Public Schools for the past twenty years, was the recipient of the

William A. Howe Honor Award of the American School Health Association at a banquet in Cleveland, October 22. The award named in honor of the founder of the Association is given each year to perpetuate his philosophy of school health.

Southern Medical Association.

The announcement that this Association is to meet in Miami, Florida, November 10-13, speaks for itself in saying this should be a banner meeting. A fact that adds interest for Virginians is that this year's president is Dr. R. J. Wilkinson of Huntington, West Virginia, who is well known in this State and has many friends as an alumnus of the Medical College of Virginia. The many sections will furnish something of interest for everyone. If you have once been to Miami, you will want to go again.

American College of Surgeons.

There was a registered attendance of 11,526 at the meeting of the College in New York City, September 22-26. Many from foreign countries were among the number. It was impossible for any one to take in all the clinics, lectures, symposia, film lectures, new films with 23 televised operations, postgraduate courses, and scientific and technical exhibits.

An outstanding feature of the Congress was the presidential address, "A Report to Our Founders," by Dr. Alton Ochsner of New Orleans.

Fellowship was conferred upon 1,177 surgeons, the largest class of initiates in the history of the College. Those from Virginia so honored are:

Dr. John D. Adams, Clifton Forge
Dr. Horace A. Albertson, Roanoke
Dr. Daniel Coleman Booker, Richmond
Dr. Lewis H. Bosher, Jr., Richmond
Dr. Walter H. Buffey, Richmond
Dr. Ray H. Grubbs, Christiansburg
Dr. Virgil R. May, Jr., Richmond
Dr. Robert E. McAlpine, Norfolk
Dr. J. Treacy O'Hanlan, Waynesboro
Dr. Charles Russell Riley, Richmond
Dr. Nelson M. Smith, Petersburg
Dr. James T. Tucker, Richmond
Dr. D. Edward Watkins, Waynesboro
Dr. Carrington Williams, Jr., Richmond

Officers who took office are: President, Dr. Harold L. Foss, Danville, Pa.; vice-presidents, Dr. Robert H. Kennedy of New York and Dr. Thomas F. Mullen of San Francisco; secretary, Dr. Michael L. Mason, Chicago; and treasurer, Dr. Warren H. Cole, Chicago.

Officers-elect are President, Dr. Fred W. Rankin, Lexington, Ky.; and vice-presidents, Dr. Frank Glenn, New York, and Dr. Dean M. Lierle, Iowa City.

Superintendent, Lynchburg State Colony.

Dr. W. I. Prichard has been named superintendent of the Lynchburg State Colony, succeeding Dr. D. L. Harrell, resigned. Dr. Prichard has, for several years, been superintendent of the Petersburg State Colony, and entered upon his new duties on November 15.

The Annual Frank N. Hack Lecture

Will be given at the Winchester Memorial Hospital, Winchester, on Wednesday November 19, by Dr. Edwin P. Lehman, Professor of Surgery at the University of Virginia, Charlottesville. His subject will be "Senile Gangrene". All physicians are invited to attend.

Appreciation of Dr. Booker.

A number of people of the Northern Neck gathered at Bethany Baptist Church on September 26th, to honor Dr. Robert E. Booker of Lottsburg in recognition of his fifty years of medical service to the community and also as an active member of the church in which he had served for many years on its board of deacons. A special program was followed by a reception for Dr. Booker and his wife and refreshments were served. Two of his sons, Drs. C. Leonard and James M. Booker, have been working with him since their graduation.

Appointment on State Board of Medical Examiners.

Governor Battle has appointed Dr. Cecil Glen Finney of Culpeper to the State Board of Medical Examiners and has reappointed Dr. C. L. Riley of Winchester and Dr. G. B. Setzler of Pennington Gap. All three will serve a term of five years.

Dr. Darius Flinchum,

Class of '44, University of Virginia, Department of Medicine, who practiced for a time at Stonega, has recently completed his fellowship in orthopedic surgery at Duke University and has opened offices in the Medical Arts Building, Columbus, Georgia, for the practice of orthopedic surgery.

Dr. Everett I. Evans,

A professor of surgery at the Medical College of

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Virginia, Richmond, is recipient of a distinguished service award given by the University of Chicago, School of Medicine, of which he is an alumnus. He was one of twenty-eight Alumni so honored at its twenty-fifth anniversary celebration on October 3. He is currently giving a series of lectures and conferences in some European cities.

The Petersburg General Hospital,

Which is to replace the old hospital which has been operating in Petersburg for more than sixty years, was dedicated on October 14 with appropriate exercises which were of interest to all residents. Tours were conducted through the building after the ceremonies and for the rest of the week. It is hoped that patients may be accommodated some time during November.

"Study of Tuberculosis in Virginia—1952."

The Virginia Tuberculosis Association and the State Health Department, with Dr. Ennion S. Williams of Richmond as chairmen of the Steering Committee, are organizing a Study of Tuberculosis in Virginia—1952. They have obtained the services of Dr. Roscoe P. Kandle, Field Director of the American Public Health Association, to direct the study. The study will appraise the present services and indicate what changes or additions are needed so that the campaign will be as effective as possible.

It is hoped that each member of the medical profession will participate in giving necessary information as to individual cases when called upon.

Medical College of Virginia News.

The Medical College of Virginia, Richmond, opened its 115th session on September 15. Enrollment for the session is: Medicine, 366; Dentistry, 205; Pharmacy, 235; Nursing, 174; Hospital Administration, 9; X-ray Technology, 23; Graduate Study, 17; Public Health Nursing, 15; Medical Technology, 21; Physical Therapy, 43. In addition 187 young Negro women are enrolled in the various courses in nursing of the Saint Philip School of Nursing. In the MCV school of nursing, besides the regular enrollment, are 62 affiliates. Twenty-nine practical nurse students are also in training. Interning are 13 young women in the department of dietetics and the house staff of the hospitals numbers 110. The total enrollment for all schools, courses, including interns is 1,509.

Gifts and grants for the period, July 1 to October 1, total $214,407.80.

Dr. Herbert W. Park, III, has been appointed Professor of Physical Medicine and Rehabilitation and Director of the Baruch Center of Physical Medicine.

Dr. Henry G. Kupfer has been promoted to Professor of Clinical Pathology and Chairman of the Department. This department has charge of the training school for medical technicians. A new degree course was inaugurated September 1 with 21 enrolled.

Dr. Miles E. Hench has been appointed Assistant Professor of Clinical Bacteriology.

Dr. Wyndham B. Blanton, Jr., has been made Assistant to the Dean, School of Medicine.

Dr. M. Josiah Hoover has been promoted to Associate Professor of Orthopedic Surgery.

Miss Susanne Hirt of the Baruch Center of Physical Medicine has been promoted to Associate Professor of Applied Anatomy.

Dr. William T. Sanger, President, was installed as President of the National Society of Crippled Children and Adults at its annual meeting in San Francisco the latter part of October.

Dr. R. Blackwell Smith, Dean of the School of Pharmacy, has been reappointed a member of the National Research Council.

Dr. Harry Lyons, Dean of the School of Dentistry, has been made president-elect of the American Academy of Periodontology.

Dr. Austin I. Dodson, Professor of Urology, has been made a member of the International Society of Urology. He was elected at the Ninth Congress of that body in New York recently. The Society has only 100 members in the United States.

Dr. Everett I. Evans, Professor of Surgery and Director of the Surgical Research Laboratories, on October 3 received a distinguished service award from the University of Chicago, his alma mater.

Doctor Evans is now in Europe on an extended lecture tour. He will give the McArthur Lectures at the University of Edinburgh and the Hunterian Oration before the Royal Academy of Surgeons, London. He will also speak to the Swedish Surgical Society, Stockholm. He will also conduct conferences on the treatment of burns in Paris, Liege, Amsterdam, Copenhagen and Lund. Doctor Evans will return to the States early in November.

Randolph-Minor Hall, a new dormitory for nurses, was occupied in September. Erected at a cost of $593,411.36 for construction and $50,000 for equipment, this new facility houses sixty student nurses and their house mothers. This is the first unit of the new structure and additions will be made later when funds are available.

The new dormitory is named in honor of two pioneer nurses of Virginia, Agnes Dillon Randolph (1875-1930) and Nannie Jacquelin Minor (1871-1934).

The Wood Memorial Building, a new home for the school of dentistry, is now well under way and completion is expected about July, 1953.

The American Academy of Obstetrics and Gynecology

Will hold its first Clinical Session December 15-17 at the Palmer House, Chicago. There will be six general discussions, and also a large number of scientific exhibits and technical displays. Dr. Carl P. Huber, of Indianapolis, the retiring president, will give his address at the time of the annual banquet.

The International Academy of Proctology

Announces its Annual Cash Prize and Certificate of Merit Award Contest for 1952-1953. The best unpublished contribution on Proctology or allied subjects will be awarded $100.00 and a Certificate of Merit. Certificates will be awarded also to physicians whose entries are deemed of unusual merit. The competition is open to all physicians in all countries, whether or not affiliated with the International Academy of Proctology. The winning contributions will be selected by a board of impartial judges.

All entries are limited to 5,000 words, must be typewritten in English, and submitted in five copies and must be received no later than the first day of April, 1953. Entries should be addressed to the International Academy of Proctology, 43-55 Kissena Blvd., Flushing 55, New York.

Dr. Homer E. Ferguson

Has recently moved his office to Suite 215 Medical Arts Building, Richmond. At the seventeenth annual Convocation of the International College of Surgeons in Chicago on September 5, he received his Fellow in Obstetric and Gynecological Surgery.

Rural Health Conference Set For February 27-28.

"Widening the Highway to Health" will be the theme of the eighth national Conference on Rural Health to be held February 27-28 at the Roanoke Hotel, Roanoke, Virginia. The day preceding the general sessions (February 26) will be devoted to an informal get-together of physicians, who are responsible for rural health programs in their respective states, to discuss "Doctor Participation in Community Programs."

The subject of financing rural medical care will be covered at Friday's sessions. An experience-and-accomplishment program to stimulate thought on "What Can *I* Do When I Get Home?" will be presented the last morning. The final luncheon speaker will tell what medicine is doing, in cooperation with other organizations and groups, to help America solve its health problems.

The National Foundation for Infantile Paralysis

Announces the availability of a limited number of additional postdoctoral fellowships to candidates whose interests are research and teaching in medicine and the related biological and physical sciences. The purpose of these National Foundation fellowships is to increase the number of professional workers qualified to give leadership in the solution of basic and clinical research problems of poliomyelitis and other crippling diseases.

Complete information concerning qualifications and applications may be obtained from: Division of Professional Education, The National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

Geriatric Symposium.

The Veterans Administration Center at Kecoughtan and The Virginia Peninsula Academy of Medicine presented a Geriatric Symposium at Kecoughtan, September 18 and 19. The presiding officers were Dr. H. Nushan, Chief of the Medical Service at Kecoughtan, and Dr. Barnes Gillespie, president of the Academy of Medicine. The program included talks by prominent visiting specialists and local doctors and each session was closed with a panel discussion by the various speakers.

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Postgraduate Seminar.

A Postgraduate Seminar on The Diagnosis and Treatment of Cancer, sponsored by the Committee on Postgraduate Medical Education of The Medical Society of Virginia is being conducted for seven weeks in Louisa on Mondays, Williamsburg on Tuesdays, Farmville on Thursdays, and Richmond on Fridays from October 6 through November 21. The Cancer specialist and Seminar Leader is Dr. Roscoe R. Spencer.

Jefferson Medical College

Philadelphia, has announced nineteen faculty promotions and six new appointments.

Dr. John B. Montgomery was promoted to professor of obstetrics and gynecology and Dr. Heinrich Brieger was advanced to professor of industrial medicine.

Three surgeons were promoted to the rank of clinical professor of surgery, Dr. Sherman A. Eger, Dr. Kenneth E. Fry, and Dr. George J. Willauer.

Advanced to the position of clinical professor of obstetrics and gynecology were Dr. Mario A. Castallo. Dr. I. Charles Lintgen and Dr. Roy W. Mohler. Dr. Theodore R. Eberhard was made clinical professor of radiology.

Dr. Walter J. Lee,

Who has for sometime been associate professor of Physical Medicine and Director of the Physical Therapy School at the Medical College of Virginia, Richmond, has located in Knoxville, Tennessee, where he is connected with the Acuff Clinic.

Virginia Division, American Cancer Society.

Dr. A. P. Jones, president, announces the appointment of Llewellyn Miller of Charlottesville as executive vice-president of this society. He accepted the appointment effective September 15.

Dr. A. I. Dodson

Of Richmond was elected a member of the International Society of Urology at its meeting in New York City, September 15-18.

He also addressed the American College of Surgeons, meeting in New York City on September 21-26. His subject was "Surgical Injuries of the Ureter".

Evening Courses for Adult Education.

The Richmond Area University Center has made available an impressive number of evening courses for adult education. This represents a cooperative undertaking by four Virginia institutions: the University of Virginia, the University of Richmond, the Richmond Professional Institute, and the Richmond Public Schools. The courses range from study in trades and sciences through sociology, art, business, philosophy, language and foreign affairs. A single catalog may be obtained from the Richmond Area University Center listing all of the courses offered. The Richmond Professional Institute will provide courses in vocational and technical subjects; the University of Richmond will give courses in business administration and in chemistry, and the University of Virginia will offer liberal arts courses.

This program provides an exceptional opportunity to those who wish to continue formal education or to acquire new skills. Almost certainly it will be enthusiastically received by the public.

L.H.B.

The United States Civil Service Commission

Has announced a Medical Officer examination for filling the positions of Rotating Intern, Psychiatric Resident, and General Practice Resident in St. Elizabeth's Hospital in Washington, D. C.

The Rotating Intern positions pay $2,800 a year, Psychiatric Resident, $3,400 to $4,200, and General Practice Resident, $3,400 to $3,800 a year. Education and training is required. No written test will be given. The maximum age limit is 35 years (waived for veterans).

Full information and application forms are available at most first- and second-class post offices, and at the U. S. Civil Service Commission, Washington 25, D. C. Applications will be accepted until further notice by the Executive Secretary, Board of U. S. Civil Service Examiners, St. Elizabeth's Hospital, Washington 25, D. C.

Wanted

For private practice in rural area. Present physician liable for military service. Contact Dr. W. I. Knight, Jr., Colonial Beach, Virginia. (*Adv.*)

Wanted

A physician for contract pratice;

A physician for industrial hospital.

Address "Industrial Physician" care this journal, 1105 W. Franklin Street, Richmond 20, Virginia. (*Adv.*)

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